

# COMMERCIAL FERTILIZER

CONSOLIDATED  
WITH THE  
FERTILIZER  
GREEN  
BOOK



## HOW TO FIND EXTRA PROFITS in a fertilizer plant

**Arcadian**

PRODUCTS FOR  
PROFITABLE FARMING

**Nitrogen Solutions**  
(NITRANA® and URANA®)

**AMERICAN**  
**Nitrate of Soda**

**A-N-L®**  
**Nitrogen Fertilizer**

**Urea Products**  
**Sulphate of Ammonia**

Sometimes operating costs higher than necessary may be "hiding" in a fertilizer plant that seems to be operating smoothly. If you can reduce these costs, you may develop extra profits.

One of the practical ways to pare down costs is to use the Nitrogen Solutions specifically adapted to each grade of fertilizer you make. The wide variety of NITRANA® and URANA® Solutions available, each with an

exact formulation, provides excellent opportunities to cut costs and maintain quality in all your mixed fertilizers.

Nitrogen Division Technical Service Representatives are thoroughly trained and experienced in the use of NITRANA and URANA Solutions in the manufacture of mixed fertilizers. Their services are available to customers without charge.

\*Trade-mark



**NITROGEN DIVISION** Allied Chemical & Dye Corporation

New York 6, N. Y. • Ironton, Ohio • Hopewell, Va. • Atlanta 3, Ga. • Columbia 1, S. C. • Omaha 7, Neb. • San Francisco 3, Calif.

JULY, 1954



From the air—a view of rock storage and dryers at Pierce, Florida, center of A.A.C. mining operations. Florida Pebble Phosphate Rock is the source of phosphorus widely used in the chemical industries, in its elemental form as well as in phosphoric acid, phosphates and phosphorus compounds. This pebble rock is also the principal source of the most important—and most generally deficient—plant food element essential in maintaining and improving crop yields. Health, growth, life itself, would be impossible without phosphorus—often called the Key to Life.

## **AA Quality...**

**for over 85 years a symbol of quality and reliability**

### **principal AA QUALITY products**

**All grades of Florida Pebble Phosphate Rock**

**AA QUALITY Ground Phosphate Rock**

**All grades of Complete Fertilizers      Superphosphate**

**Gelatin      Bone Products      Salt Cake      Ammonium Carbonate**

**Sulphuric Acid      Fluosilicates      Insecticides and Fungicides**

**Phosphoric Acid and Phosphates**

**Phosphorus and Compounds of Phosphorus**

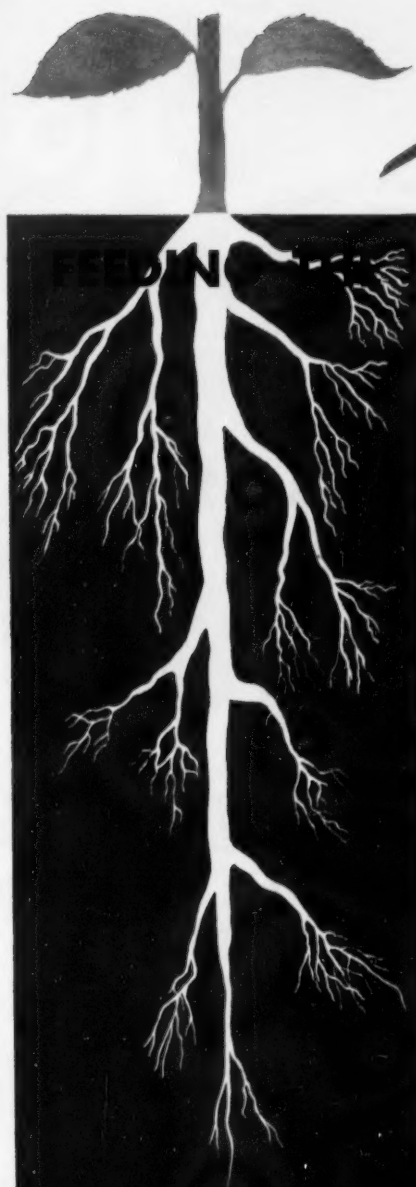


Part of the almost continuous procession of freight cars that load at Pierce.

**THE AMERICAN AGRICULTURAL CHEMICAL COMPANY**

GENERAL OFFICE: 50 CHURCH STREET, NEW YORK 7, N. Y.

33 FACTORIES AND SALES OFFICES, SERVING U.S., CANADA AND CUBA—ASSURE DEPENDABLE SERVICE



# Taproot OF SUCCESS...

Just as *quality* in the fertilizers you manufacture assures growth for the farmers' crops, just as surely does that reputation for *quality* assure growth for the manufacturers' business. For the very taproot of success in any business is the insistence upon quality in the goods produced.

There is no higher quality source of nitrogen for your Fertilizers than SMIROW TANKAGE. It is 100% natural organic. It is 90% water insoluble and 90% available. SMIROW TANKAGE is always in perfect mechanical condition . . . another mark of quality. It is uniform both in color and in texture.

To feed this taproot of the successful growth of your operation see that correct proportions of SMIROW TANKAGE assure outstanding quality in your goods.

To help make your sales grow,  
write for samples and prices.



**SMIROW  
TANKAGE**

MAKES PLANTS GROW



**WHLAND COMPANY**

CHICAGO, ILLINOIS • CHEMICAL, ILLINOIS



## Rugged NEW **SHOVELoader** mechanizes bulk handling for only \$3395<sup>00</sup>\*

For LESS than \$10.00 a day for one year . . . much less than you pay a laborer with a hand shovel . . . you can own a Baker-Lull 12 cubic foot SHOVELoader. And you get a lot more for the money!

Check all of these features and see why this SHOVELoader compares with others costing \$350 to \$400 more. The lift height is a tall seven feet with lifting capacity a husky 1500 pounds . . . 500 pounds more than most competitive units. The loader arms are located out in front of the operator—not around him—to keep him safe from injury and give him clear-view visibility at all times. The bucket can be cradled low too, giving

him unobstructed forward visibility and making it unnecessary to drive backward as with other units. Maximum travel speed is 14 MPH. Plenty of bucket tilt back at ground level makes it easy to get a full bucket every time from stockpiles . . . letting you reduce handling costs by moving more bulk in a shorter time.

Attachments let you do more types of work too. Lift forks let you handle palletized loads, the crane hook gives you a portable hoist, and special buckets are available for handling dense materials. Exhaust-destroying catalytic equipment is also available for indoor use where necessary.

Baker-Lull SHOVELoadERS are available in sizes ranging from 12 cubic feet to 1½ cubic yards four wheel drive. Should you desire information on other sizes please specify when writing. The BAKER-LULL Corporation, 406 West 90th Street, Minneapolis 20, Minn.

\*F.O.B. Minneapolis

THE BAKER-LULL CORPORATION,  
406 West 90th Street • Minneapolis 20, Minn.  
Please send full information on the Baker-Lull, Model 20, 12  
cu. ft. SHOVELoader which sells for only \$3395.00.

NAME.....  
COMPANY.....  
ADDRESS.....  
CITY.....STATE.....



### **SHOVELoader**



# Get ready for increased late-summer demand for **NITROGEN**



High-nitrogen  
fertilizers with  
USS Ammonium  
Sulphate for  
pasture and  
hay land

USS Ammonium  
Sulphate for  
direct  
application  
on pastures

**E**ACH year brings increased demand for nitrogen as more and more farmers come to appreciate the tremendous importance of this "growth element" to more efficient and better crop production. Tests are proving its profit-boosting value; agronomists and state universities are urging farmers to use adequate nitrogen on all crops. Last summer, those crops that were adequately fertilized with nitrogen showed greater yields and healthier plants despite the severe drought.

## **USS Ammonium Sulphate . . . better nitrogen for better yields**

This form of nitrogen has proved itself a most

dependable and popular source for both mixed fertilizer and direct application. For USS Ammonium Sulphate is a dry, free-flowing material that will not cake and clog equipment. It's an easy mixer. And, it's especially popular with farmers because it resists leaching and is available as the plants actually need it.

For sale as a direct application, USS Ammonium Sulphate comes in sturdy, moisture-proof 100-pound bags. There are numerous producing plants and sales offices conveniently located throughout the country. Check your stocks and be sure you've got enough to keep your dealers well supplied.

# USS AMMONIUM SULPHATE



UNITED STATES STEEL

# COMMERCIAL FERTILIZER

ESTABLISHED 1910

July, 1954

Volume 89 No. 1

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Published Monthly by

WALTER W. BROWN PUBLISHING CO., INC.

75 Third St. N. W., Atlanta, Georgia

Phone Atwood 4160

ERNEST H. ABERNETHY, *President*

BRUCE MORAN, *Editor* CLAY W. PENICK, *Managing Editor*

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Subscription rates: United States, \$3.00 per year; 5 years, \$12.00. Foreign \$5.00 per year.

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Address all correspondence to Atlanta Publishing Offices, sending direct to:  
COMMERCIAL FERTILIZER, 75 Third St., N. W., Atlanta, Georgia.

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Phone REPUBLIC 1-3050

COMMERCIAL FERTILIZER, entered as second class matter, October 12, 1910, at the post office at Atlanta, under the Act of March 3, 1879. Published monthly except semi-monthly in September, by Walter W. Brown Publishing Co., Inc., 75 Third St., N. W., Atlanta, Georgia.

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*What do we know about your business?*

## When you have Fertilizer Plant needs



Extensive research and investigation of all the facts are necessary to make the building of a fertilizer plant economically sound. Many years of experience in the fertilizer industry have made Harte engineers cognizant of the over-all picture to be considered in fertilizer plant design. Realizing that certain fundamentals must be followed while specializing the design of each plant, all possible facts are studied and adapted to produce a sound, enduring investment.

If you plan to build a fertilizer mixing plant, or an associated plant, the Harte organization of specialists can handle your complete job or any part, from original design to operating plant. Under the Harte System all steps — site study, planning, architectural, engineering, purchasing, construction management — are integrated, assuring smooth-working continuity. Assuring a saving in time and money. In fertilizer plant planning there's no substitute for experience. Call in the Harte organization for a discussion of your plans. There's no obligation.

**JOHN J. HARTE COMPANY** | ENGINEERS  
CONSTRUCTION MANAGERS

**SPECIALISTS IN THE FOLLOWING PROCESSES:**

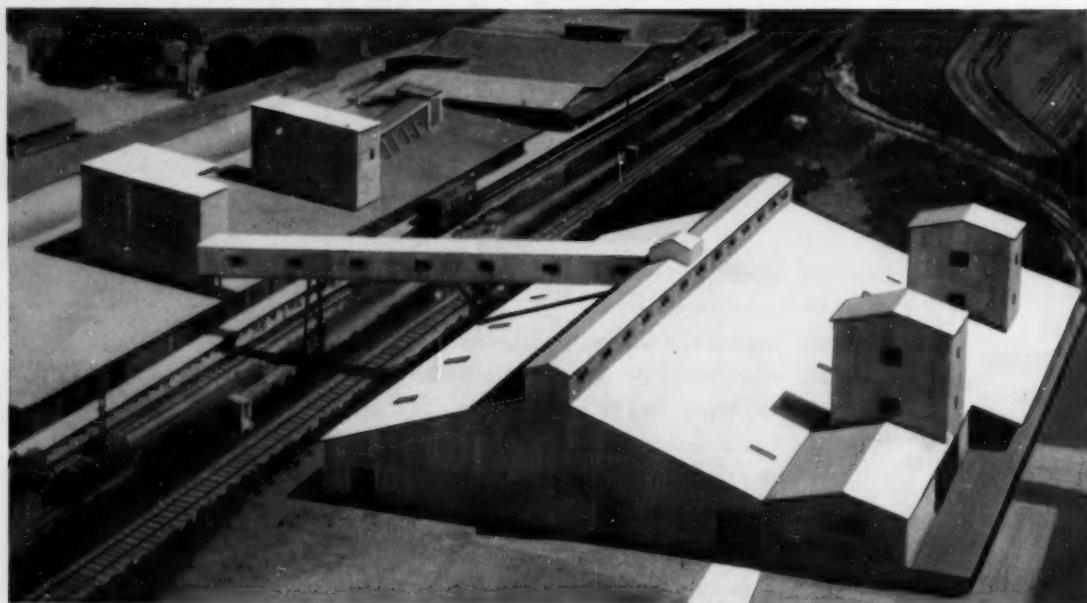
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# DIXIE GUANO Company

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## LURIA Standardized Buildings



**Only LURIA provides the SPEED and ECONOMY of STANDARDIZATION...  
plus all the ADAPTABILITY and DURABILITY of CUSTOM-DESIGNED UNITS**

Luria structural steel buildings live up to their promise of high-speed construction coupled with low cost . . . of standardized design adaptable to almost any type of architectural treatment that best suits your *individual* needs . . . of structures of hot-rolled steel components that surpass the most stringent building code requirements. This is proven by



Luria's outstanding record of *repeat* orders in the commercial fertilizer field.

If you are planning expansion now or in the future, the list of companies who re-order Luria buildings will impress you — just as the many advantages of Luria Standardized Buildings will interest you. Contact your Luria representative, today. *It pays!*

**LURIA ENGINEERING Company**

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**AMERICAN INDUSTRY BUILDS WITH LURIA**





## PRODUCED IN THE WEST— TO GROW THE BEST

Farm profit can be measured in fertilizer bags. The vital plant food elements you take from the soil in growing healthy, profitable crops *must be restored*. Every bag of Trona Muriate of Potash and Trona Sulphate of Potash in your mixed fertilizer is vital in building healthy plant tissue, bolstering crop resistance to drought and disease — and makes future bumper crops possible. That's why Potash — Trona Potash, produced in the west to grow the best — is your yardstick for measuring profit on your investment. Don't gamble! Make certain your crops are receiving plenty of health-giving, profit-building Potash by including TRONA POTASH in your fertilizer program.

For Trona Potash as a simple or in mixes see your local fertilizer dealer. He has both Trona improved Muriate and Sulphate of Potash in stock now.

## American Potash & Chemical Corporation

Offices • 3030 West 6th Street, Los Angeles 54, California  
122 East 42nd Street, New York 17, N. Y.  
214 Walton Building, Atlanta 3, Georgia



Trade Mark AP&CC

Data has been prepared on the application of Trona Potash and how it benefits important western farm crops. You'll profit by sending for this information today.



SEE YOUR LOCAL FERTILIZER DEALER

AMERICAN POTASH & CHEMICAL CORPORATION  
3030 West Sixth Street, Los Angeles 54, California

Please send information and bulletin on Trona Potash for high quality crops:

NAME \_\_\_\_\_

ADDRESS, P. O. BOX NUMBER \_\_\_\_\_

CITY \_\_\_\_\_

STATE \_\_\_\_\_



# JUST AROUND THE CORNER

By Vernon Mount



BREATHING EASIER, the consumers of this country are beginning to buy more freely. A lot of them were worried about their jobs. A lot more were concerned because, with overtime lopped off, their take-home pay was less. And most of us, I think, felt we were not getting our money's worth, but do think so now.

JUNE AND JULY unemployment figures should be discounted. It is normal for them to rise, as the June graduates hunt for jobs. Their absorption this year is not much slower than usual, but it inflates the figures over the more encouraging Spring data.

PRODUCTION ECONOMIES, brewing over the past several years, as rising wages pushed management into it, are now showing in the figures. Net profits are due to improve, even though prices have been sharply cut in many lines.

DEFENSE BUDGETS cannot be cut as deep as planned, because the Indo-China situation hangs over us, and we must be prepared to jump if the alliance of US and England manages to pull in the remainder of the interested world, and if Red China jumps. The Government wants to avoid controls...but don't be surprised if they are forced on us by conditions. Watch the report to Congress which Eisenhower will make in the next few weeks, and be guided by that.

Yours faithfully

*Vernon Mount*

*No. 1 of a series*

**How Bemis makes  
GOOD multiwall bags  
for you**

*A.R. Ewing, director of the Bemis Paper Control Laboratory, has twenty-nine years' experience in this field. He is shown operating the laboratory's electro-hydraulic tensile tester, one of the many precision devices that make the Bemis laboratory probably the most complete in the country devoted to bag papers.*



## Use good paper... test it... prove it!

Bemis sets high standards for the various papers used in making Bemis Multiwall Bags. And we are able to maintain these standards because we buy our paper from a variety of top sources. These multiple sources are the key—if one should fall below par, the others are there to supply our needs. We don't have to take less than the best.



# Bemis

General Offices—St. Louis 2, Missouri  
Sales Offices in Principal Cities

Fertilizer Manufacturers:

Read how

**Nacconol\***

THE LOW-COST "CURE" ACCELERATOR

can increase your peak shipping capacity

- Substantially reduces curing time
- Breaks the bottleneck of curing-bin capacity
- Avoids the regrinding of lumped bagged goods
- Assists in keeping finished fertilizer free-flowing—in the bag and in the curing bin

**Here's how Nacconol works:**

As little as one pound of Nacconol per ton of finished goods, accelerates the reaction between the superphosphate and the ammoniating solution . . . causes the batch to cure in much shorter time. And because the cure is more complete, "mixed-goods" are free-flowing—in the bin—in the bag—in the fertilizer spreader. You can cut costs in the plant, avoid regrinding of lumpy bagged material. Your farmer friends get a better product.

**Here's how Nacconol is used:**

Use Nacconol NR Flake or Dense Beads—the free-flowing, non-dusting types that disperse beautifully and uniformly. Add the required amount at the weighing hoppers or pre-mix with potash or other dry materials being used in the mixture. Distribute Nacconol throughout mix as thoroughly as possible. It's simple and easy as that! And it's inexpensive.

Nacconol is available from nearby warehouse stocks. Write, wire or phone our nearest office for price and delivery.

**NATIONAL ANILINE DIVISION**

ALLIED CHEMICAL & DYE CORPORATION

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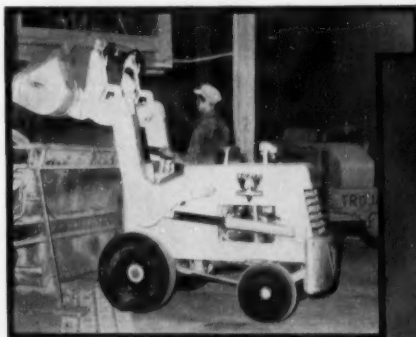
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# Trojan Loadsters are ... **MAN-HOUR SAVERS!**

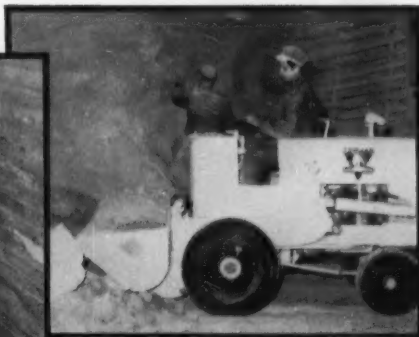
Production moves **FAST** with the multi-purpose Trojan Loadster Model LA-40. The LA-40 handles **ALL** kinds of bulk material in **ALL** kinds of plants. Whether loading or unloading, the LA-40 delivers the goods fast, using a minimum of working space (turns in a 6'6" radius). Model LA-40 travels fast too, with its low load carrying position, giving you "more tonnage per day."



Here's complete safety with Model LA-40 dumping into hopper.



Model LA-40 Unloading Boxcar with room to spare.



Model LA-40 Digging cured material for bagging.

## exclusive **BIG 3** features:

### **1** Reverse curve arms\* for safety!

Even when the bucket is fully raised, constant 360° vision and complete safety for your operator is maintained.

(\*U.S. Pat. 2,645,369)

### **2** Low load carrying position!

A low load is a safe load for stability and speed; especially when handling fertilizer and other bulk material. Your operator will like Trojan's "wheel level" carrying position.

### **3** Independent bucket action!

Just flipping the bucket closed, this operator gets a full load everytime. Trojan's independent bucket action pries loose hard packed material, too.

There's one in the Trojan Loadster Line to fit your need —  
Model LA-40 — Model LMS-75 — Model LC-100 — Model LC-100-B



**CONTRACTORS MACHINERY CO., INC. • BATAVIA, NEW YORK**

**TROJAN**

Mail this coupon today for full details on Model LA-40.

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TITLE \_\_\_\_\_ COMPANY \_\_\_\_\_

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[illegible]

**When you buy  
NITROGEN FERTILIZER MATERIALS  
...GET TECHNICAL SERVICE, TOO!**

## LION'S

**"Controlled Quality"**  
**and what it means to you**

When you visit El Dorado or New Orleans you will want to inspect Lion's giant chemical plants where Lion Nitrogen Fertilizer materials are manufactured. You'll be impressed by the painstaking efforts to assure highest quality products...reaching you in first-class condition. This is what we mean by "Controlled Quality"—which can mean a great deal to you.

**"Controlled Quality" is your assurance that you will be formulating with only top grade nitrogen materials... that you will be selling quality products.**

Enduring business success must be built on high quality. When you buy Lion Nitrogen Fertilizer materials, you can be sure you're building your business on a sound foundation . . . fortifying yourself for the highly competitive period ahead.

**LION**

**offers one-stop nitrogen service  
and  
specialized technical assistance**

**LION ANHYDROUS AMMONIA**—For formulation. A uniformly high-quality basic product. Nitrogen content, 82.25%.

**LION AQUA AMMONIA**—For formulation or acid oxidation. Ammonia content about 30%. Other grades to suit you.

**LION AMMONIUM NITRATE FERTILIZER** — For formulation or direct application. Improved spherical pellets. Guaranteed 33.5% nitrogen.

**LION NITROGEN FERTILIZER SOLUTIONS —**  
For formulation. Three types to suit varying  
weather and manufacturing conditions.

**LION SULPHATE OF AMMONIA**—For formulation or direct application. Large free-flowing crystals. Guaranteed nitrogen content, 21%.

**TECHNICAL SERVICE**—Lion provides special technical assistance for fertilizer manufacturers. Write to **CHEMICAL SALES DIVISION** for quick service.

**LION OIL**  
**EL DORADO**



**COMPANY**  
**ARKANSAS**



**160**

used by one fertilizer manufacturer\*



**65**

used by one chemical manufacturer\*

**more industries use more**  
**PAYLOADER®**  
**TRACTOR SHOVELS**  
**than all others combined**



**20**

in one food processor's plants\*



**43**

used by a large steel producer\*



**29**

used by one producer of castings\*

MILLIONS OF TONS of bulk materials are handled *daily* by "PAYLOADER" tractor-shovels in all kinds of industries. Sand, clay, coal, chips, chemicals, fertilizers, earth—all manner of materials are scooped up, carried, loaded, dumped, spread, unloaded and piled by these versatile, efficient machines.

Indoors and outdoors, they work fast and efficiently because they have high speeds in reverse as well as forward and maneuver easily and rapidly.

If you have bulk material handling problems, it will pay for you to find out how "PAYLOADER" tractor-shovels can help you too. There's a size and type to fit *your* need—eight models with capacities from 12 cu. ft. to 2 cu. yd. Your "PAYLOADER" Distributor is ready to give you full facts. The Frank G. Hough Co., 702 Sunnyside Ave., Libertyville, Illinois.

\*name on request

**You Can't Compete If Your Equipment Is Obsolete**



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 THE FRANK G. HOUGH CO. • LIBERTYVILLE, ILL.



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✓ BIGGEST SUPPLY    ✓ BEST QUALITY  
✓ LOWEST PRICE . . .



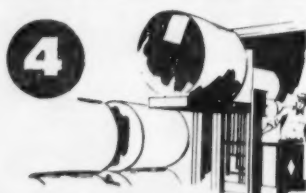
**CONDITIONING AGENT FOR COMMERCIAL FERTILIZER**—Aquafil is the product stabilizer that ends caking in the bag.



**DILUENT FOR INSECTICIDES**—With Aquafil you get high concentration which means savings.



**COVERING AGENT FOR AMMONIUM NITRATE**—High absorption qualities make Aquafil an effective agent.



**RESIDUAL FILTERING AGENT IN PAPER INDUSTRY**—Impurities rapidly filtered out by Aquafil's action.



**INERT FILLER FOR INSULATION INDUSTRY**—Aquafil offers stable, uniform filler for industry needs.

## AQUAFIL PROPERTIES

**Density:** 9.6 pounds per cubic foot.

**Fineness:** 95.3% through 325 mesh.

**Composition:** Aquafil is amorphous diatomaceous silica.

**Inertness:** Used by many industries as inert filler.

**Suspension:** Excellent in water and air.

• More and more users of diatomaceous earth are turning to Aquafil . . . and finding it profitable. Aquafil offers you a high quality product, from North America's largest level deposit . . . and at less cost. It will pay you, too, when you look into the use of Aquafil as a means of improving your product, as it increases your profit margin. Next time you order diatomaceous earth . . .

*Specify AQUAFIL!*

AQUAFIL COMPANY

96 B Avenue N.E.

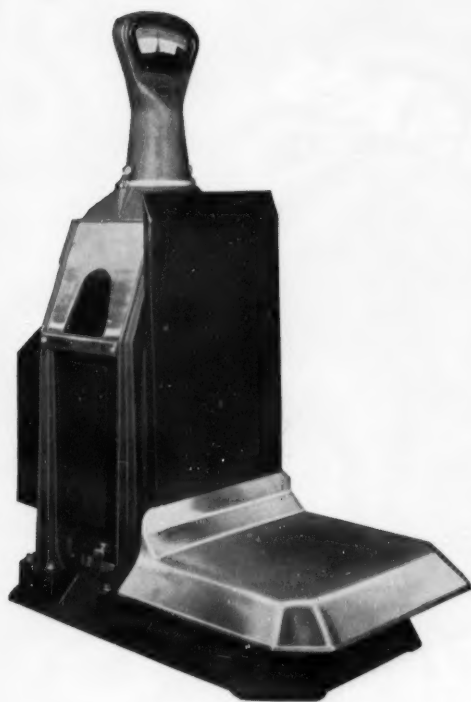
Cedar Rapids, Iowa

COMMERCIAL FERTILIZER





# EXACT WEIGHT High-speed Low-platform Sacking Scale



Speeds manual sacking or checkweighing of chemicals two ways—short lever fall plus the action of an adjustable damping device bring indicator to rest quickly, and magnified indication makes possible an accurate reading at a glance. Tower is set at a 30-degree angle and revolves to any reading position. Weighing platform is only 6½ inches from floor—minimizes lifting of containers. Open construction permits easy cleaning. Weighs accurately in out-of-level position. Send coupon for complete details on Model 1120.

The Exact Weight Scale Co.  
906 W. Fifth Avenue  
Columbus 8, Ohio

Send full information on Model 1120

Name .....

Address .....

City ..... Zone ..... State .....

SALES and SERVICE  
in all principal cities  
from coast to coast and  
Canada



**Exact Weight**  
Better quality control  
Better cost control *Scales*

**THE EXACT WEIGHT SCALE COMPANY**

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# phosphates



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## BANKERS WRITE FARM PLATFORM

Under the auspices of Spencer Chemical six outstanding Midwest farm bankers got together in Kansas City to discuss the role the "country banker" can play in encouraging better and more profitable farming, and released a "Platform for Better Farm Banking." The bankers, representing six states, had been chosen by their colleagues in previous statewide elections as most deserving of the title, "Distinguished Farm Banker," a program designed to focus more attention on the ever-growing task of extending farm credit.

"Distinguished Farm Bankers" honored were: John H. Crocker, president of the Citizens' National Bank, Decatur, Ill.; E. J. Evens, cashier of the Citizens Bank, Amsterdam, Mo.; Roy Sweet, president of the Story County State Bank, Story City, Ia.; D. E. Crouley, vice-president of the Northwestern National Bank, Minneapolis; R. N. Downie, president of the Fidelity State Bank, Garden City, Kans., and James R. Kenner, president of the Thayer County Bank, Hebron, Nebr.

They set up this "guide" for farm bankers:

### A PLATFORM FOR BETTER FARM BANKING

We endorse the following set of principles for better farm banking. In our collective experience in the farm field, we have seen these methods (1) provide superior service to farm customers, (2) increase farm production and income and (3) build the economic well-being and the long-term future of the farm community.

**FARM KNOW-HOW.** We believe that bankers in farming communities should keep abreast of the rapidly changing developments in farm and livestock technology. This involves close personal contacts with the local county agent, teachers of vocational agriculture and Soil Conservation Service workers, as well as the close reading of farm publications and occasional visits to the state college to discuss new developments. We also believe bank employees

## The Way I See It

by BRUCE MORAN



The Capper Publications are conservative, careful about the statements they make . . . and certainly the friend of the farmer. So a recent research bulletin of theirs makes logical and, at this time, highly appropriate grist for this department. Their point: 1953 was really not such a bad year for agriculture.

It was 5.3% above the post-war average—1946-52. 1950, which was considered a good year for agriculture, was 9% under 1953.

Nor was the farmer in bad shape in 1953: U. S. farms averaged \$4000 of quick assets each. They reported a median net worth of \$13,500 for 1953.

How many business men can show as solid a financial position as that? How many business men will feel that all is lost if their business falls off 4%? But when it happens to the farmer, the headlines scream!

Farming is an industry. How many of our industries can show cash sales of \$31,000,000,000? That is the USDA estimate of cash receipts from farm markets in 1953.

And the Fifth Plate problem is just around the corner, as Vernon Mount would say. They way I see it, we who sell the farmer have nothing over which to spill crocodile tears.

should be encouraged to attend the college "short courses" in agricultural credit.

**A FARM SERVICE MANAGER.** We strongly endorse the movement to place a skilled agricultural representative, chosen for his education and practical experience in agriculture, on the bank staff. We believe that such representatives should be encouraged to assist the bank's customers in following a sound, scientific farming program.

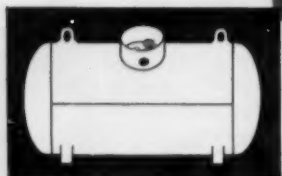
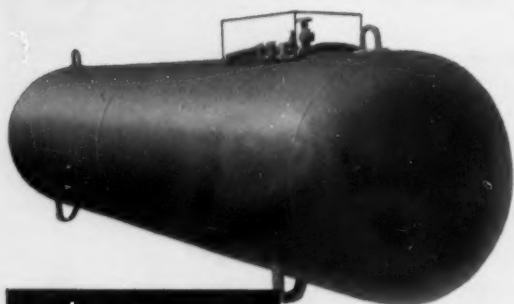
**FARM MEETINGS.** Since the farm educational job is never completed, we suggest that country banks, when possible, should sponsor annual farm meetings for their customers. Or, if this is impractical, they should throw their enthusiastic support behind meetings conducted by county agents, teachers of vocational agriculture or other farm leaders in the community.

(Continued on page 82)

### INDUSTRY CALENDAR

Date	Organization	Place	City	State
July 20-22	Pacific Conference	Klawath Falls AES		Oregon
Oct. 18-19	Fertilizer Safety	LaSalle Hotel	Chicago	Ill.
Nov. 8-12	Crop, Soil	St. Paul Hotel	St. Paul	Minn.
Nov. 10-12	NFA	Hollywood Beach Hotel	Hollywood	Fla.
Nov. 15-16	CFA	del Coronado Hotel	Coronado	Cal.
Dec. 2-3	Cotton Insect	Adolphus	Dallas	Texas

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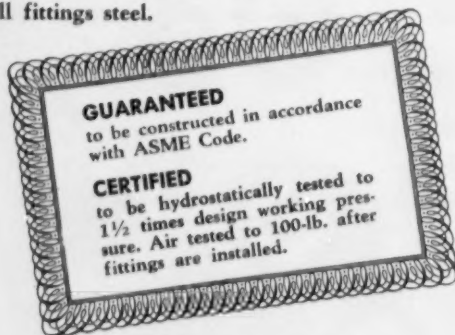
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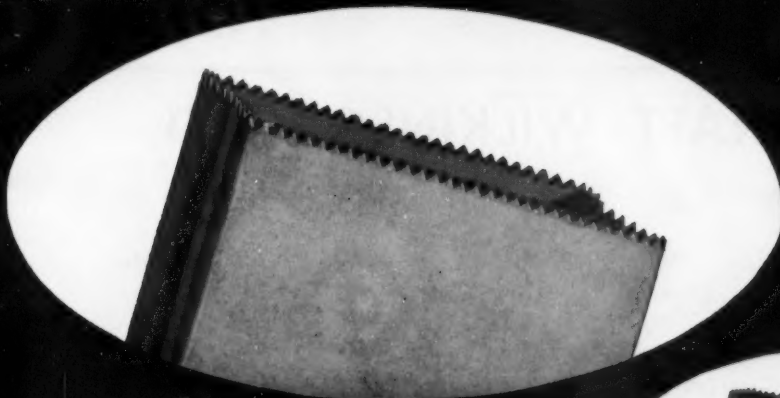


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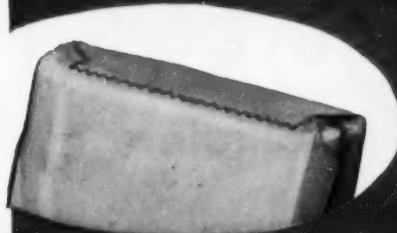
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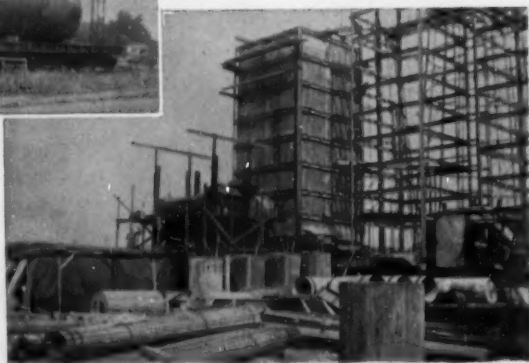
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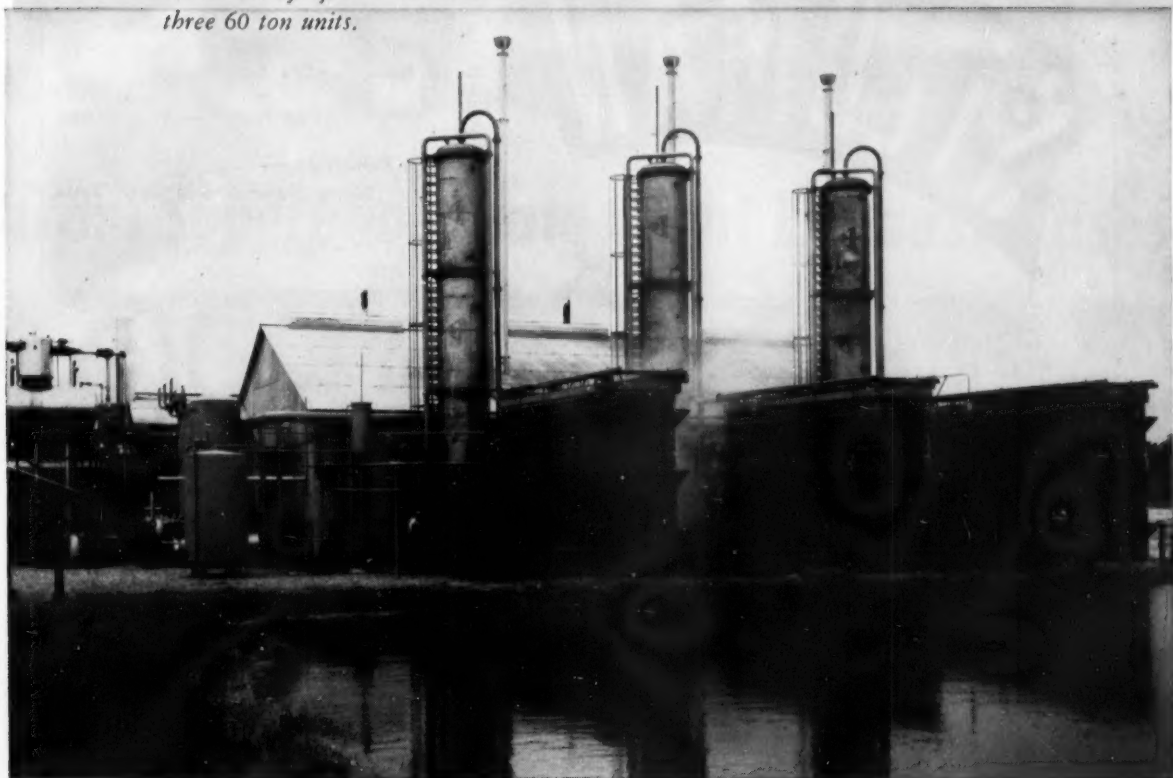
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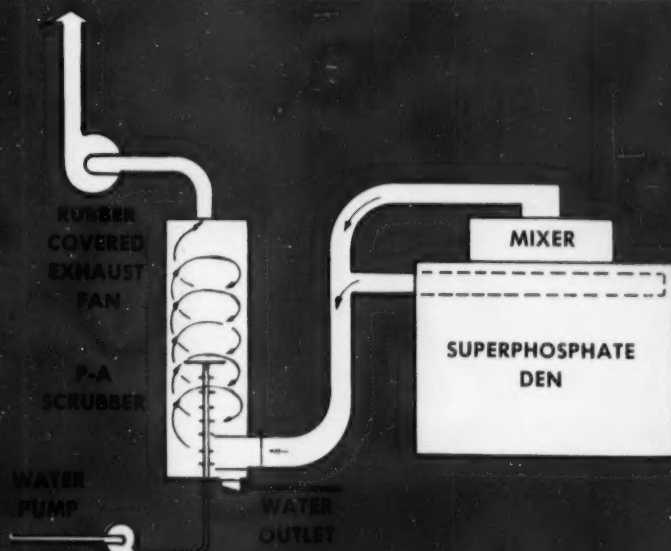
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# APFC HOLDS NINTH CONVENTION

The ninth annual convention of the American Plant Food Council was held at The Homestead in Hot Springs, Va. on June 10-11 and 12. The initial business meeting took place on June 11, preceded by a ladies' tea, a board meeting and a good-time "game night" on the evening of June 10.

To open the meeting, Paul T. Truitt, president of the organization, made a brief address pointing out the progress shown in the past year and expressing appreciation to all who had contributed to the advancement.

The forum on "Improving Agricultural Public Relations and Information to Farmers" was opened by the moderator, Robert H. Reed, editor of "Country Gentleman," who made a short talk before introducing the members of the discussion panel. Citing the strides in communication to the farmer, he recalled that in his boyhood days the farmer "knew plenty, but most of it was wrong."

Pointing to the need for improvement of the farmers' information channels to the public, he said it is regrettable that the public understands the farmer's situation so poorly that he must constantly be "on the defensive about his capacity to produce."

First of the panel group to be introduced was Stanley Andrews, managing director of the National Project in Agricultural Communications at Michigan State College. With a topic "Some New Efforts to Improve Agricultural Information," he described how the project—sponsored by the Kellogg Foundation in cooperation with the land grant colleges—is conducting research aimed at helping agricultural communicants to improve the transmission lines for both editorial and advertising matter to farm families. Mr. Andrews explained that experience had indicated about 25% of the farmers utilize the information at hand and are continually pushing the

colleges for development of new methods, while another 50% always lag behind and fail to use improved techniques already available. The gap between the two groups, he indicated, is growing wider each year, so that nine percent of the farmers are now producing 60% of the crops.

The greatest problem, Mr. Andrews stated, is that of gathering and organizing national and international economic facts and presenting this information to the farmer in such a form that he can base his decision on it. These recommendations must be practical enough that the farmer can use them, and not in some idealistic theoretical form.

Citing the opportunities in the industries supplying agriculture, he said there are 15,600 openings at present and only 8200 agricultural college graduates this year. Some way must be found to channel capable young people into these fields where a shortage of trained personnel will exist for at least five years as a result of today's needs.

Mr. Andrews outlined the project's work with research and extension service economists and described how they have been brought together in "writing workshops" to teach them better how to get information across to the farm families. Of primary importance in this line, he concluded, is that the communicant first have something to say and then say it is the shortest and most direct manner.

Second panelist was J. M. Eleazer, extension information specialist, Clemson Agricultural College, Clemson, S. C., whose subject was "How to Talk to Farmers." From his wide experience as a farm advisor through the media of bulletins, newspapers, radio and television, he offered a few suggestions to those who want to convey information to farmers. All of us, he reminded, like what comes easy; farmers, too, like to read below their education level, so the communication should be simple. Next it needs personality, so the reader can feel it; thus, he advised, it

## KEY TO STAFF PICTURES AT APFC

1. George Pettitt, Potash Co. of America, Washington. 2. H. Milam, Chilean Nitrate Sales Corp., Jackson, Miss. 3. Ed Kitchen, Pacific Coast Borax Co., Webster Groves, Mo. 4. Fred Coope, Potash Co. of America, Carlsbad. 5. W. R. Ashburn, and Sid Rydell, both of Smith-Douglass, Norfolk. 6. H. H. Tucker, Coke Oven Ammonia Research Bur., Dr. C. J. Willard, American Society of Agronomy, both of Columbus, O. 7. Harry Lawless, Kraft Bae Corp., New York. 8. J. H. Culpepper, Smith-Douglass, Norfolk. 9. H. M. Albright, U. S. Potash Co., and Omar Sanders, Fertilizer Industries, both of New York. 10. Mrs. H. M. Albright, New York. 11. Mrs. John Sanford, Atlanta. 12. Mrs. J. M. Rawlings, Montgomery. 13. Mrs. George Pettitt, Washington. 14. Mrs. George Moyers, Chicago. 15. Dick Goldthwaite, Lion Oil Co., El Dorado, Porter Brinton, Hydrocarbon Products, New York. 16. Walter Harding, Federal Chemical Co., Louisville. 17. John Sanford, Armour Fert. Wks., Atlanta. 18. George Pettitt, Potash Co. of America, Washington. 19. E. W. Harvey, Nitrogen Div., New York. 20. W. E. Schaffnit, Stedman Foundry & Machine Co., Philadelphia. 21. W. H. Milam, Chilean Nitrate Sales Corp., Jackson. 22. Jack Jackson, Station KCMO, Kansas City. 23. John McDonald, Station WSM, Nashville. 24. Borden Chronister, Nitrogen Div., Hopewell. 25. Frank E. Adams, P. H. Johnson, J. H. Carpenter, Koppers Co., Pittsburgh. 26. Mr. & Mrs. Claude Byrd, Spencer Chemical, Kansas City. 27. George Wash. Bartlesville, Jack Bryant, Tampa, both with Phillips Chemical Co. 28. J. H. Naffel, Pacific Coast Borax Co., Auburn. 29. W. H. Appleton, Potash Co. of America, Atlanta. 30. George Suggs, Nitrogen Division, New

York. 31. Paul Truitt, APFC, Washington. 32. W. T. Wright, F. S. Royster, Norfolk. 33. Grayson Morris, O. E. Zacharias, A. P. Sale, Jr., all with Coop. Fert. Service of Richmond. 34. S. R. Cooke, F. S. Royster, and J. E. Ames, Robertson Chemical Corp., both of Norfolk. 35. Fred Purcell, Combustion Engineering, Atlanta. 36. Sinclair McCoy, International Minerals & Chem. Corp., Chicago. 37. M. S. Malone, International Minerals, Atlanta. 38. Harry Moore, Armour Fert. Wks., Atlanta. 39. M. S. Wright, Texas Farm Products, Nacogdoches. 40. George Suggs, Nitrogen Div., New York. 41. Scott Hill, Reliance Fert. & Lime Corp., Norfolk. 42. Mrs. J. D. Robbins, Rocky Mount, N. C. 43. Tom Athey, Albemarle Paper Mfg. Co., Richmond. 44. Cliff Baughman, F. S. Royster, Norfolk. 45. Cecil Arledge, Virginia-Carolina, Richmond. 46. Todd Lightfoot, The Lummus Co., New York. 47. Joe Howell, Virginia-Carolina, Richmond. 48. J. M. Rawlings, F. S. Royster, Montgomery. 49. Fred Bryan, Chilean Nitrate Sales Corp., Atlanta. 50. Mr. & Mrs. Tom Camp, Jr., Southwest Potash Corp., New York. 51. Nelson Myers, Texas Gulf Sulphur Co., New York. 52. Watts Gunn, Chilean Nitrate Sales Corp., Atlanta. 53. Harold McCormick, Jr., Hammond Bag & Paper Co., Wellsburg. 54. Fred Techter, Nitrogen Div., New York. 55. Mrs. Walt Horan, Walt Horan, House of Representatives, Washington. 56. W. J. Reisack, H. J. Baker & Bro., New York. 57. K. D. Morrison, Philipp Bros. Chemical Co., New York. 58. W. W. Johnson, Smith-Rowland, Norfolk. 59. Walter Harding, Federal Chemical Co., Louisville. 60. Byron Stewart, Jones & Laughlin Steel, Pittsburgh. 61. T. Robert Cocks, Farmers Coop. Fert. Purchasers, Kenbridge, Va.



should be written as though it were being spoken, and not necessarily according to accepted literary style or form. Then, he continued, a thing needs to be described as if it were being seen to reach the reader clearly. Anything important in the communication should be reiterated at least once, he recommended, but every effort must be made to keep the message brief. In closing, Mr. Eleazer reviewed: forget form; use plain words and simple statements; and by all means keep it brief.

Closing the panel discussion was Ed Lipscomb, director of public relations for the National Cotton Council of America. The following paragraphs are direct excerpts from his talk

So far as I have been able to find, there are two major reasons why any man or company or group has had bad public relations. One is faulty performance, and the other is faulty communications.

In the case of the farmer, I submit that the problem is much more one of faulty communications than faulty performance. Naturally there have been some flaws in performance. Yet one American farmer today is feeding more non-farm workers than ever before in history . . .

## APFC BOARD

Elected to the board of directors of the American Plant Food Council for three year terms were the following members: J. D. Stewart, Jr., Federal Chemical Co., Louisville; James R. Rossman, Woodruff Fertilizer Works, North Haven, Conn.; Fred T. Techter, Nitrogen Division, Allied Chemical & Dye Corp., New York; A. F. Reed, Lion Oil Co., El Dorado, Ark.; M. S. Wright, Texas Farm Products Co., Nacogdoches, Texas; George W. Gage, Anderson Fertilizer Co., Anderson, S. C.; Howard C. Fisher, Diamond Fertilizer Co., Sandusky, Ohio; W. L. Waring, Lyons Fertilizer Co., Tampa, Fla.

feeding them better meals than they have ever eaten . . . and receiving for the job a smaller percentage of their total income than he has ever received. Despite shrinking agricultural manpower, he has steadily improved both the quality and quantity of his production. He has fed and clothed us, our armies, and our allies through two wars; and in periods of peace has made possible much of our industrial progress by freeing nine out of every ten of us from the necessity of earning our daily bread

from the soil. His record forces the admission that on the whole his performance is far ahead of his position in public opinion.

If we agree that performance has been reasonably good, we must look for our answer to one other place—bad communications. In other words, the farmer has a better story than has been told. He is misunderstood and unappreciated by the public through combination of misinformation and lack of any information at all.

Undoubtedly one of the farmer's greatest liabilities, from the public relations point of view, has been the immoderate politician. In his efforts to out-promise his opponents or out-perform his predecessors, the over-eager demagogue has created far more resentment toward the farmer than sympathy for him or understanding of him. Despite the fact that less than one-fourth of the nation's agricultural production is directly supported by federal farm programs, and despite the fact that farm income for five years has gone down while that of all other major groups was going up, the public impression has been created that farmers in general are an excessively coddled and pampered lot who are

1. Charles Hoeven, House of Representatives, Washington, Ezra Taft Benson, Secretary of Agriculture, Paul Truitt, APFC, Paul Sanders, Southern Planter. 2. Members of the Agricultural Public Relations Forum: Robert H. Reed, Editor, Country Gentleman, Stanley Andrews, Managing Director, National Proj. Agric. Communications, J. M. Eleazer, Extension Information Specialist, Clemson College, Ed Lipscomb, Director of Public

Relations, National Cotton Council, Memphis. 3. Louis Wilson, APFC, presenting Soil Builders Awards to R. P. Crossley, Cappers Farmer, Topeka, and Earl W. McMumm, Cleveland. 4. Paul Truitt, APFC, Washington. 5. Dr. H. B. James, North Carolina State College, Raleigh. 6. Secretary of Agriculture, Ezra Taft Benson.





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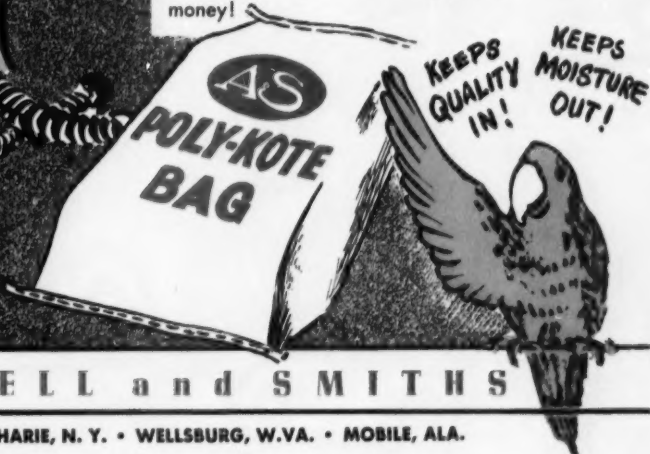
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guaranteed a profit by the great god government.

A second major source of bad public relations for agriculture has been the professional hierarchy of labor. The leadership of any successful widespread movement must have a stable of devils, and in this instance the farmer has been kept in a convenient stall from which he could be pulled and publicly flogged as a protest against the high cost of living. There is the utmost logic in such a selection, for without him labor spokesmen would be able to explain the high cost of living only in terms of the increased wages of labor—and obviously distasteful alternative.

A third and highly important contributor to lack of understanding of the farmer is inherent in the nature and pattern of today's public press itself. Virtually all mass media—whether newspapers or magazines or newsreels or broadcasts—are prepared and edited primarily for city populations. They take almost entirely the point of view of the consumer. The burning of potatoes by government agents gets many times the space which is given to the decision of potato farmers to refuse public subsidy.

Another source of bad public relations is the absence of any adequate, coordinated, national effort to create in the public mind a true

## KEY TO PICTURES



1. Horace Albright, U. S. Potash Co., New York, P. J. Prosser, Baugh & Sons Co., Baltimore. 2. Mr. & Mrs. Jim Devlin, Southwest Potash Corp., New York. 3. Horace Cory, American Cyanamid Co., New York, Claude Byrd, Spencer Chemical Co., Kansas City. 4. Charles Mittleman, Kraft Bag Corp., New York. 5. John C. Moor, Sturtevant Mill Co., William Kelly, Southern Lead Burning Co., both of Atlanta. 6. George W. Gage Anderson Fertilizer Co., Anderson, S. C., John Sanford, Armour Fert. Works, Atlanta. 7. Mr. & Mrs. Ralph Boynton, U. S. Potash Co., Atlanta. 8. Mr. & Mrs. Gordon Cunningham, Tennessee Corp., Atlanta. 9. George Suggs, Nitrogen Division, New York. 10. Mr. & Mrs. John Hall, Potash Co. of America, Washington. 11. Mr. & Mrs. W. M. Campbell, Dixie Guano Co., Laurinburg. 12. Dr. K. D. Jacob, and Dr. W. H. Allaway, both of USDA, Beltsville, and J. R. Sargent, Federal Chemical Co., Louisville. 13. Mr. & Mrs. D. A. Williams, Soil Conservation Ser. Washington. 14. W. L. Gay, Berkshire Chemicals, New York, F. S. Moore, F. S. Royster, Norfolk. 15. Don Fangmeyer, Mathison Chem. Corp., and Albert Spillman, G.L.F. Soil Building Service, both of Baltimore.

understanding of the farmer's problems, position, and progress.

He cited ways and means whereby businessmen, through their advertising and educational programs, could improve the public relations position of farmers, but he emphasized that only through a "centrally-operated national program of public relations . . . adequately financed and staffed . . . can the full job be accomplished."

In concluding the first morning's activities, Louis H. Wilson, APFC director of information, made the annual presentation of the Soil Builders' Award. Robert P. Crosley,

editorial director of "Capper's Farmer," was presented the award for the farm magazine in the over-300,000 circulation group, and Earl W. McMunn, editor of the "Ohio Farmer," received the award for publications in the under-300,000 class.

Representative Charles B. Hoeven of Iowa, chairman of the House Subcommittee on Fertilizer and Farm Machinery, opened the second-day convention session with a talk on "The Farmer and Congress." Reminding the group that "As goes agriculture, so goes industry," he said that this nation cannot go on enjoying a period of economic prosper-

ty unless the farmer is assured a share in the benefits of a high-level consumption. The farmer, he stated, has less control over the price of the commodities which he buys and those which he sells than any other segment of our population.

Mr. Hoeven described how the new omnibus farm bill has attempted to consider the situation in its entirety of attacking the problems piecemeal as has been done so often in the past. He outlined the potential benefits which can be derived from the surplus disposal bill which had recently been reported out of committee. This bill allows the president

## KEY TO STAFF APFC PICTURES

1. Mr. & Mrs. H. C. Moore, B. F. Sutherland, H. V. Miller, J. C. Watt, all with Armour Fert. Wks., George McCarty, Ashcraft-Wilkinson, all of Atlanta. 2. Eugene German, Duval Sulphur & Potash Co., Houston, Warren Huff, Ashcraft-Wilkinson Co., Columbus, O., George Serviss, G. I. F. Soil Building Service, Ithaca. 3. Mr. & Mrs. W. B. Copeland, Smith-Douglass, Norfolk. 4. Chas. Tomlin, Ohio Valley Fertilizer Co., C. E. Littlejohn, U. S. Potash Co., Columbus, Gil Nooe, Ohio Valley Fertilizer Co., Maysville, Ky. 5. J. M. Rawlings, F. S. Royster, Montgomery, S. F. Thornton, F. S. Royster, Norfolk,

Mrs. Thornton, and Mrs. Rawlings. 6. H. V. Miller, W. E. Shellburne, and B. F. Sutherland, all with Armour Fert. Wks., Atlanta. 7. Mr. & Mrs. George Moyers, International Minerals, Chicago. 8. T. C. Rogers, Nitrogen Div., New York, J. D. Medlin, Maxton Oil & Fert., Maxton, N. C., M. E. Hunter, Nitrogen Div., New York. 9. Jim Walker, The Lummus Co., Elaine Burnap Todd Lightfoot, The Lummus Co., Mrs. Fred Techter, M. F. Fogler, Nitrogen Div., C. F. Burnap, Chem. & Indust. International Ltd., all of New York. 10. Felix Harvey, III, Dixie Chem. Co., New Bern, Mary Payne Cole, John Bennett, American Cyanamid Co., New York, Mrs. Felix Harvey, Ward Cole, Joseph C. Jett, Norfolk. 11. Mr. & Mrs. Dean Gidney, U. S. Potash Co., New York.





to use government-owned agricultural surplus commodities in foreign trade—even in exchange for foreign currency—to pay bills owed by this government in those countries, to by strategic materials for stockpiling, to promote international trade, to develop export markets, and to aid other nations in developing their domestic production facilities. The president is also empowered by the bill to use these surpluses to relieve the stress of disaster, including unemployment.

Despite the tremendous publicity which has been given to surplus commodities, Mr. Hoeven explained, the government's average loss over the past twenty years has been only five million dollars annually on basic commodities. Most of the losses on surpluses, he said, have been incurred in such other products as potatoes, wool, dairy products and eggs. Compared to an overall cost of 16 billion dollars a year for the federal agricultural program, he concluded, the cost of basic commodities price support has been reasonable.

Following Mr. Hoeven's talk, the convention heard an address by the Honorable Mr. Ezra Taft Benson, secretary of agriculture. The paragraphs which follow are direct quotations from the Secretary's speech.

America needs to be strong to face up to the dangers and challenges that confront us. We in agriculture need to know what we can do, and should do—working together—to help our agriculture serve the welfare of the nation.

Farming efficiency is many things. It is crops and soils, methods and men. It is machines and electric power. It is the use of adapted plant and seed varieties that will produce big yields and high quality crops. It is good rotations to help maintain and build soil fertility. It is protecting the land against erosion. And it is the wise use of plant food—of fertilizers, of crop residues, of lime and other soil-building aids.

We've made amazing progress in agricultural production. Today's farmer produces as much food and fiber as five farmers did a century ago. A man-hour of farm work

produces about three times as much grain and oil crops as it did in 1910. And within the past decade, progress in farming efficiency has been especially impressive. In 1940 it took 47 man-hours to produce 100 bushels of wheat; now it takes 31 hours. It took, in 1940, 191 man-hours to grow a bale of cotton; now it takes 143. Before World War II it took 83 man-hours to produce 100 bushels of corn; now it takes only 45.

This has been due to several factors. Better soil and water management by many farmers, hybrid corn, rust-resistant small grains, new insecticides, fungicides, and weed killers, and millions of units of new farm machines, have all played important parts in this development. But one of the greatest factors has been the vastly increased use of fertilizers and lime.

Fertilizers now account for at least 25 percent of our present crop yields. We are using about 2-½ times as much fertilizer as we did in 1940—and about four times as much as in 1910.

Experiments in West Virginia de-

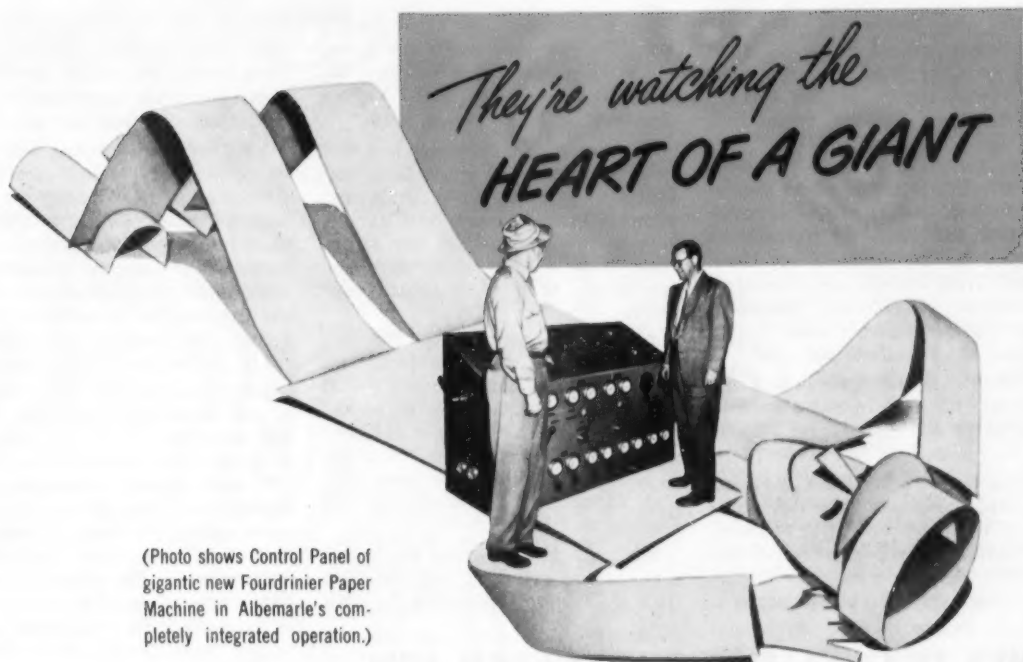
## KEY TO STAFF APFC PICTURES

1. Hollis Seavey, Clear Channel Bldg., Washington, Bob Walton, Potash Co. of America, and R. P. Ackerman, Jr., Grace Chemical Co., both of Atlanta, look on as scorekeeper tabulates their rounds. 2. Mr. & Mrs. Leroy Donald, Lion Oil Company, El Dorado, Mr. & Mrs. Chas. J. Sanders, Nashville, Tenn. 3. Bob Borg, International Minerals & Chem. Corp., Chicago, J. W.

Reisack and Frank Cabe, Chicago, both with H. J. Baker & Bro., J. Walter Harding, Federal Chemical Co., Louisville. 4. Ed Phillips, Coop. G.L.F. Soil Building Service, Hutch Hodgson, John J. Powell Co., both of New York, Whitney Campbell, Dixie Guano Co., Laurinburg, Bob Zipse, John J. Powell Co., New York. 5. C. E. Gettinger, Woodward & Dickerson, J. H. Zwemmer, Smith-Douglass, Norfolk, R. R. Hull, and S. R. Coale, both of I. P. Thomas & Son Co., Camden.







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veloped the interesting fact that fertilization tripled yields of some crops on some land, and increased the organic matter in the soil by 50 percent. In Arizona, researchers working with alfalfa found that heavy fertilization and frequent light irrigations produced 13 tons of hay per acre—nearly twice as much as when low rates of fertilization and normal irrigation were used. In the Great Plains, application of 25 pounds of nitrogen increased wheat yields in some areas by an average of 10 bushels per acre.

In Wisconsin, adequate liming and fertilizing have increased yields on some farms anywhere from 20 percent to more than 100 percent.

Though our agriculture is using 2-½ times as much fertilizer as it did in 1940, we are still nowhere near realizing its full potential. We are just learning what can be accomplished through heavy applica-

tions of nitrogen and other fertilizers. We can also make far better use of crop and animal residues. We need to know more about "minor elements" and how to use them.

We use far less fertilizer per acre than the farmers of western Europe. Farmers in the Netherlands use about 20 times as much fertilizer per acre as we average on our arable land. With a large population and few acres, they must obtain high yields.

As we learn more about the best use of fertilizer in combination with other practices, the potential yields per acre seem to mount in an almost fantastic way. In Illinois it has been shown that irrigation and the use of nitrogen fertilizer can boost normal 80-bushel corn yields to 150 bushels and higher.

We know the formulae for bringing wasted, worn-out, and idle land back into heavy production. In Utah

I have seen much land that had been abandoned because of salinity. With proper treatment, some of that once-abandoned land now produces 40 bushels of wheat per acre.

I have seen estimates, and I have no reason to doubt them, that American farmers could produce 6 billion bushels of corn, over 2 billion bushels of wheat, and 2 billion bushels of oats on present corn, wheat, and oat lands simply through the application of sufficient fertilizer in combination with other already tested improved practices.

There are at least two conflicting schools of thought regarding the future demands on our agriculture and its ability to meet these demands. One looks at our population, growing by over 2-½ million persons a year, and at the limits of our available land, and says: "By 1960 we may number 175 million—by 1975 well over 200 million—and in another century twice as many people as we have today. We'll have to keep humping. It's going to be a terrific struggle to maintain a high level diet for our people."

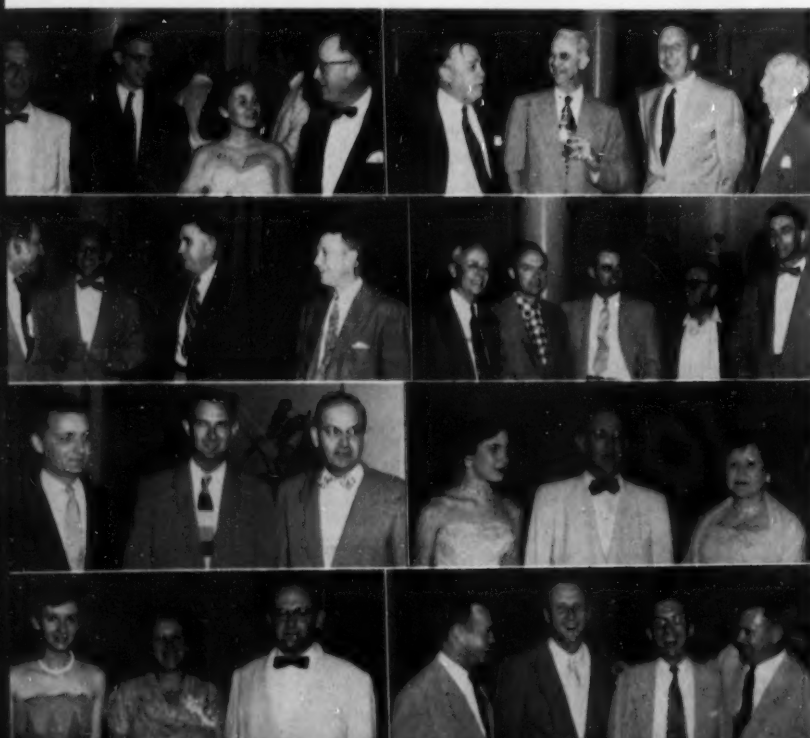
The other school looks at our poorly used resources, at our waste of foods and fibers, at new resources that can be brought into use, at new formulas for increasing output, and says: "We've only scratched the surface of our potentialities. New technology, and the increased use of fertilizer, in combination with other practices may mean surpluses in the country for a long time to come—and surpluses mean hard times for farmers."

Frankly, I'm not frightened by either school. I believe that our land resources, properly cared for, will adequately provide for our food needs as far into the future as we can foresee. I believe also that a sound farm program with a flexible price structure, which permits supply to adjust to demand, will enable us to use abundance as a great blessing.

Nobody knows of course just how much food we're going to need in the future. Nobody knows how big our population will actually grow. Nobody knows whether the future will bring peace or war. Nobody

## KEY TO CF STAFF PICTURES FROM AFPC

1. Steele Wright, Texas Farm Products Co., Nacogdoches, Lucius Kellam, Pat Wescott, and Ralph Douglass, Smith-Douglass, all of Norfolk. 2. B. Robertson, Robertson Chemical Corp., Norfolk, George W. Moyers, International Minerals & Chem. Corp., Chicago, L. Dudley George and W. E. Barret, both of Richmond Guano Co., Richmond. 3. Chas. Burroughs, Jr., R. D. Cooke, Jr., and F. S. Moore, all of F. S. Royster Guano Co., Norfolk, "Dugan" Taylor, Grand River Chem. Div., Tulsa. 4. M. W. Whipple, Olds & Whipple, Hartford, Conn., Harry Hughes, New York, John H. Divly and John Gruber, both of Baltimore, all with St. Regis Sales Corp., F. A. Davis, Spencer Kellogg & Sons, Buffalo. 5. C. O. Smith, Jr., C. O. Smith Guano Co., Moultrie, John Sanders Spencer Chemical Co., Atlanta, Bruce Cloaninger, Assoc. Amer. Fert. Control Officials, Clemson. 6. Becky Cuipepper, Mr. & Mrs. Joe Cuipepper, Spencer Chemical Co., Kansas City. 7. Mary, Mr. & Mrs. Henry A. Davis, President, Assoc. of Amer. Fertilizer Control Officials, Durham, N. H. 8. Ted Neeley, Potash Co. of America, Raleigh, Bill Chadwick, International Minerals & Chem. Corp., New York, Herb Mackay, Olds & Whipple, Hartford, Conn., and Ed Smith, Potash Co. of America, Sunset, Md.



COMMERCIAL FERTILIZER

knows how great world demand will be for American food. All this is in the realm of theory, not of fact.

But there are some facts that seem very clear:

(1) There's no point in wasting our resources. There's all sorts of good, common sense in preserving and building up fertility.

(2) There's not an iota of sense in attempting to put a damper on progress in farming efficiency. It can't be done—not for long.

(3) Abundance that goes to waste does nobody any good. It wastes land, labor, machines, gas, oil, transportation and storage facilities. It creates the threat of depression by undermining farm income. It injures our farm people in intangible ways—by increasing their dependence on government and weakening their self-dependence. It hurts the farm programs. And it hurts the prestige and influence of this nation in world affairs.

Now those three facts are undeniable. They lead to three conclusions:

(1) We must use all available measures better to improve our resources.

(2) We must push ahead with research and other advances to improve efficiency.

(3) We must market what we produce.

Whatever farm programs we have in the future, they should be based over the long pull on abundant production rather than scarcity. Ours is a growing and expanding economy. Our economy of the future will not be static. It will be one of abundance—well balanced abundance—not scarcity. We need a dynamic agriculture to keep pace with our national development.

We in the Department of Agriculture know how important expanded use of fertilizers is in a dynamic agriculture. The Department and the Land-Grant Colleges have cooperated recently in establishing a comprehensive program intended to promote more effective use of fertilizer and lime. This provides an opportunity for public and private agencies and groups to keep up-to-

date on research results and to help point the way toward beneficial research projects in the years ahead. We believe that this will be of great help in meeting the needs of the future. It will increase and maintain per acre yields, build new strength in the soil, and aid the farmer in getting a fair share of the national income.

But, of course, fertilizer alone will not do the job. Effective use of larger amounts of fertilizers will require a highly geared technology in the whole cropping system. We will need—in some cases—a completely new approach to crops and soils problems. We will need improvements not only in fertilizers, but also better adapted varieties of crop plants, with improved practices for controlling weeds, plant diseases, and insects; better machinery for applying both fertilizers and pesticides; improvements in cultivating and harvesting equipment; and more efficient use of our water resources.

If farmers are to use the vastly increased quantities of fertilizer the soils of the nation require, costs must be held down to a reasonable relationship with farm prices, by means of improved manufacturing processes, more efficient merchandising, and other cost-cutting methods. I feel sure that this is a fact of which you are keenly aware.

What I am saying is that we must have a rounded and well-balanced approach to agriculture, and that it is vital for all of us who are interested in American agriculture to appreciate this fact.

Now you may perhaps be wondering whether there is some inconsistency in this picture that I've been painting about further advances in agricultural yields when one of biggest present challenges we face is how to dispose of our surpluses.

Actually, there is no real inconsistency here at all. A prosperous agriculture depends on efficiency—and this in turn depends on increasing productivity per acre, per animal, per machine, and per man-hour.

The goal of our agriculture is efficient production of ample kinds and quantities of food and fiber, with adequate provision for perm-

anent productivity, and a fair return to farmers. Farmers should use fertilizers and every other cost-reducing, yield-increasing practice that pays off. They should increase efficiency in every way that is profitable and serviceable.

If farm programs create a situation where efficiency is costly to the nation—or if market demands change—then let us amend the programs, let us adjust production, let us improve the marketing situation. But let us not try to repeal common sense.

Let us not stand in the way of abundance. Let us profit by abundance—learn to use it—improve our living by means of it.

You of the fertilizer industry—like farmers—and like the American people generally—are concerned not only with producing abundance, but with marketing abundance.

We are now attempting to give to marketing the important place it deserves in the agricultural picture. We have not yet fully succeeded. But we're making headway. And we will succeed.

In the past primary reliance has been placed on rigid price supports—even when the level of support for some crops became unrealistic. In so doing marketing was neglected—sold short. When the market reacted unfavorably against rigid prices, the remedy has been to clasp the lid on production. Under present law that is still the remedy.

This is the scarcity approach—the economy of scarcity. Farmers, and the nation, are entitled to a more common sense price support program. The farm program proposals made by this administration last January are part of our effort to help agriculture market its production, not stock it away in warehouses at a cost of \$5 million per week for storage alone.

The removal of artificial price barriers would encourage the movement of crops to markets, at home and abroad. Over a period of years the results would be higher and more stable income for agriculture, larger and more permanent markets,

(Continued on page 80)



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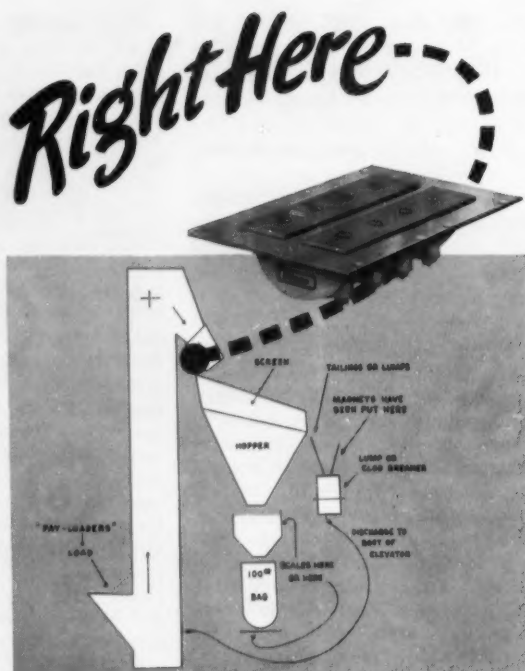
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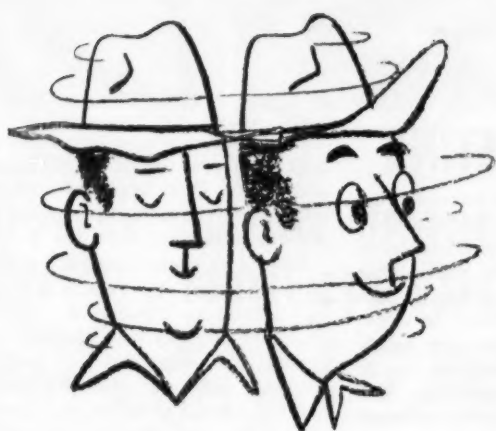
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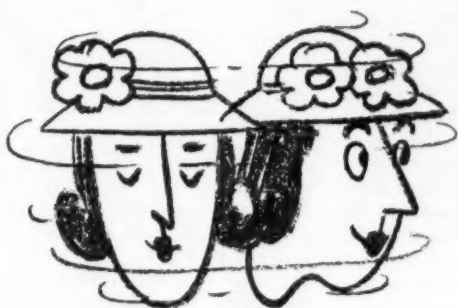
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# Safety . . .

## 60 ATTEND MARYLAND MEETING

When the Fertilizer Section of the Governor's Safety-Health Conference held its third annual meeting in Baltimore, sixty representatives of the industry from Florida, Kansas, Maryland, New York, North Carolina, Pennsylvania, Texas and Virginia attended.

F. W. High, manager of operations, Baugh Chemical Company, Baltimore, was chairman and A. B. Pettit, supervisor of Industrial Health and Safety, Davison Chemical Company Division of W. R. Grace & Co., was vice-chairman.

Dr. Vincent Sauchelli, director of agricultural research, Davison Chemical Company Division of W. R. Grace & Co., Baltimore, in speaking on Chemical Progress Week, pointed out that although the high standard of living in America is heavily dependent upon chemicals this was not generally recognized by the public. This was because the benefits of chemicals are chiefly indirect and are not easily seen or appreciated. He mentioned many of the contributions made by chemicals and stated "Chemical fertilizers assisted by pesticides are

the chief bulwark we have against possible starvation in the future".

In commenting upon the opinion generally held by the public that chemical plants were unsafe and unhealthy places in which to work, Dr. Sauchelli said "You are safety and health men in fertilizer plants. That is your responsibility. You know from personal experience that fertilizer plants in which chemical operations are constantly carried on, where fumes and dusts are quite prevalent, that it is possible to have the operations proceed day after day, and months on end without an accident. And further, that the general health of the operatives is as good as that of most non-chemical industries. You can truthfully testify that those allegations about the hazards of chemicals and of working with chemicals, one often hears or reads about, are for the most part false."

Paul Grundman, safety engineer, Armco Steel Corporation, Baltimore, gave an excellent talk and demonstration on the use of mechanical and electrical models in teaching accident and fire prevention

matters to employees.

Thomas J. Clarke, personnel manager, G. L. F. Soil Building Service, Ithaca, New York, demonstrated a way to stimulate interest in safety meetings. Using colored slides of plant scenes he conducted a contest on what is wrong in the picture, making liberal use of a bell, buzzer, and prizes. Tom kept the audience alert and interested throughout his presentation.

The afternoon session opened with an address by Vernon S. Gornito, insurance manager, Smith-Douglass Co., Norfolk, Virginia, and general chairman, Fertilizer Section, National Safety Council. He briefly covered the organization and growth of the National Section, its accomplishments to date and its immediate objectives. He also announced the appointment of a three-year planning committee which is to make its first report at the meeting of the Executive Committee at the Greenbrier, White Sulphur Springs, West Virginia, June 13th.

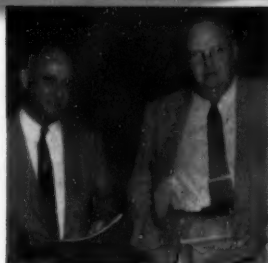
Next followed the report of case histories of accidents by a six man panel. This evoked considerable discussion from the floor and brought forth a valuable exchange of information on accident prevention.

Chairman High in closing the meeting discussed the questionnaire on 1953 accident experience in the industry and urged all those who had not already done so to complete and return the questionnaire.

1. J. W. Lautenberger, Curtis Bay Works, Davison Chemical, Baltimore; E. N. Lacy, F. S. Royster Guano Co., Baltimore; A. T. Hoch, Baugh Chemical Co., Baltimore; George F. Dietz, Fertilizer Mfg. Coop., Inc., Baltimore; John A. Miskelly, Mathieson Chemical Corp., Baltimore; Curtis A. Cox, Virginia-Carolina Chemical Co., Richmond; standing is Wayne High, Baugh Chemical Co., Baltimore, who was chairman of the panel discussing accident case histories. 2. Paul Grundman and Wayne High listen as Dr. Vincent Sauchelli, Davison Chemical, Baltimore, delivers opening address. 3. Thomas J. Clarke, G. L. F.

Soil Building Service, Ithaca, N. Y., demonstrates how to conduct an interesting safety meeting. 4. Paul Grundman, Armco Steel Corp., Baltimore, demonstrates how locking out start button can fail to prevent motor from starting. 5. Paul Grundman shows what happens to overloaded electric circuit when penny is used behind burned-out fuse. 6. Vernon S. Gornito, Smith-Douglass Co., Norfolk, chairman of Fertilizer Section's Executive Committee, National Safety Council, addresses the group.





1. Charlie Best, and Ralph Fraser, Summers Fertilizer Co., Baltimore, shown holding special permits to take time off to go fishing. 2. Safety Officers: John Smith, Spencer Chem., Kansas City, A. B. Pettit, Davison Chemical Corp., Baltimore,

Vernon Gornto, Smith-Douglass, Curtis Cox, Virginia-Carolina. 3. Wayne High, R. G. Diserens, Phillips Chemical Co., Bartlesville, Mike Ellison, Mississippi Chemical, Gordon Pittcock, Wm Stone Sons, Ingersoll, Ont.

## MIDYEAR MEETING OF THE FERTILIZER SAFETY SECTION

The Advisory Committee, Fertilizer Section, National Safety Council, met for its mid-year session at the Greenbrier Hotel, White Sulphur Springs, W. Va. on May 13. Chairman Vernon S. Gornto presided at the meeting.

Curtis Cox reported briefly on the President's Conference on Occupational Safety, which he and several other members of the Committee attended at Washington on May 4-6. John Smith reported on the Industrial Conference which he and Vernon Gornto attended in New York on April 5. Stewart Washburn outlined pertinent points of the June 7 meeting of the Industrial Conference at Chicago, with emphasis on need for additional staff assistants for sections within the conference and on compilation of a Section Activities Manual.

Tom Clark asked the members for more assistance in obtaining items for the Newsletter. He also reported that the Section's Program Committee, of which he is chairman, had assembled an unusually interesting program for the National Safety Congress in October at Chicago.

The proposed Employee Motivation Project was also brought before the committee by Tom Clark with details of its purpose and a resume of the potential benefits to the staff in preparing a better program for the industry. He explained that the project would be conducted by the University of Chicago under the direction of its Industrial Relations Department head, Dr. Nelson, at a cost of approximately \$2500, to be underwritten by contributions from member firms of the Section. After some discussion the

committee unanimously approved the undertaking, and the chairman appointed Stewart Washburn and Tom Clark to set up the arrangements.

The committee reluctantly accepted the resignation of Ralph Fraser, who explained that the pressure of his other duties with his company made his request necessary. Both he and Charles Best, who also retired from the committee, received certificates prepared by Tom Clark conferring on them the title of Piscatorial Doctor, and permitting them to go fishing whenever

The report of the Publicity Committee, sent in by absentee Chairman Larry Shopen, urged all possible local publicity with clippings of each item to be forwarded to him for accumulation.

A. B. Pettit, reporting for the Engineering Committee, spoke of growing concern about safety procedures to be followed in introducing insecticides into complete fertilizer mixtures. As chairman of that committee, he was directed to draw up a resolution regarding the course to be pursued by the committee in this matter and to submit the resolution to the Advisory Committee for a mail ballot, and to the officers of the two industry associations for their comments. He asked that specific attention be directed at the noise and fluoride problems, and the committee concurred in this recommendation.

Ed Burroughs presented a safety graph on hand trucks to the group, and it was returned to the artist for correction of a technical detail before approval. He reported that plans for producing a safety film for the industry would be held in

abeyance until a study could be made of the results of the Employee Motivation Project. Some discussion followed on the possible production of a slide film series, but no definite action was taken on this.

Ray Murray advised the committee that satisfactory progress was being made on the compilation of the Safety Rule Book, and that the final draft would be submitted to the Engineering Committee for its approval before being turned over to the printer.

Wayne High, chairman of the Contest and Statistics Committee, reported that there were 164 participants in the contest this year as against 133 last year, and urged that every effort be made to get an even greater number of plants to compete. He also reported that a summary of the information gained through the questionnaires sent to the industry early this year would be ready for the October Conference in Chicago.

John Smith presented the outline of a program formulated to guide the officers and staff for the next three years, and it was adopted by the unanimous consent of those present.

After the reading and discussion of a letter from M. F. Wharton regarding possible surveys of Workmen's Compensation Insurance rates in each state, Chairman Vernon Gornto appointed R. G. Diserens to compile this data for the use of the committee.

An outstanding event of the meeting was the presentation to the committee of four new memberships obtained by Dick Bennett, who received special recognition from the chair for his efforts.

The group decided to follow the recommendation of a special committee appointed for the purpose that the year-end meeting be held in Memphis on December 7.



**SAFETY AWARDS** Top: Mayor R. A. Donahue (left) of Halifax, Nova Scotia, presents the National Safety Council's Certificate of Commendation to John Cree, works foreman at the Halifax plant of Canadian Industries, Ltd., which recently celebrated a safety record of almost eleven years without a lost-time accident. Looking on (center) is A. B. Talmie, works manager. Center: Charley Miller, southern safety and personnel manager for the Texas Company, presents the Texas Safety Association's Industrial Award to Safety Director Harold Haley of San Jacinto Chemical Co., Houston. The anhydrous ammonia plant, a division of Smith-Douglass Co., received the award for ending 1953 with only one lost-time accident. Bottom: At presentation of the National Safety Council's Award of Honor to Davison Chemical are (left to right): W. B. McCloskey, vice president, chemical operations; A. B. Pettit, director of industrial health and safety; John P. Rostmeyer, executive secretary of the Baltimore Safety Council; J. W. Carothers, president of the Council; and Marlin G. Geiger, president of Davison.

## Shuford's Last Work for Safety

Just before his unexpected death—a serious loss to the cause of safety in all industry—Commissioner Forrest H. Shuford, North Carolina Department of Labor, Raleigh had made a study of back injuries in the fertilizer plants of North Carolina, and a special pamphlet prepared, which is of value and should be in the files of every safety committee. Ask for Bulletin #7—"It takes two to tangle—with Heavy Loads."

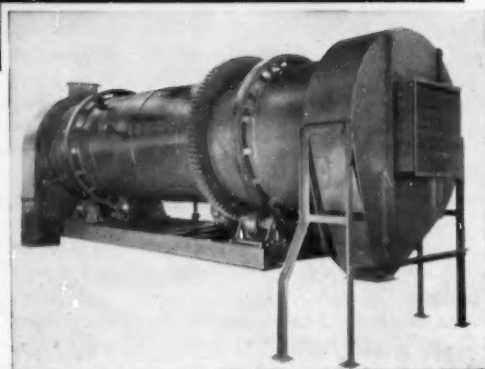


The plaque which was awarded Commercial Fertilizer Magazine by National Safety Council, for exceptional service to the cause of safety in the year 1953.

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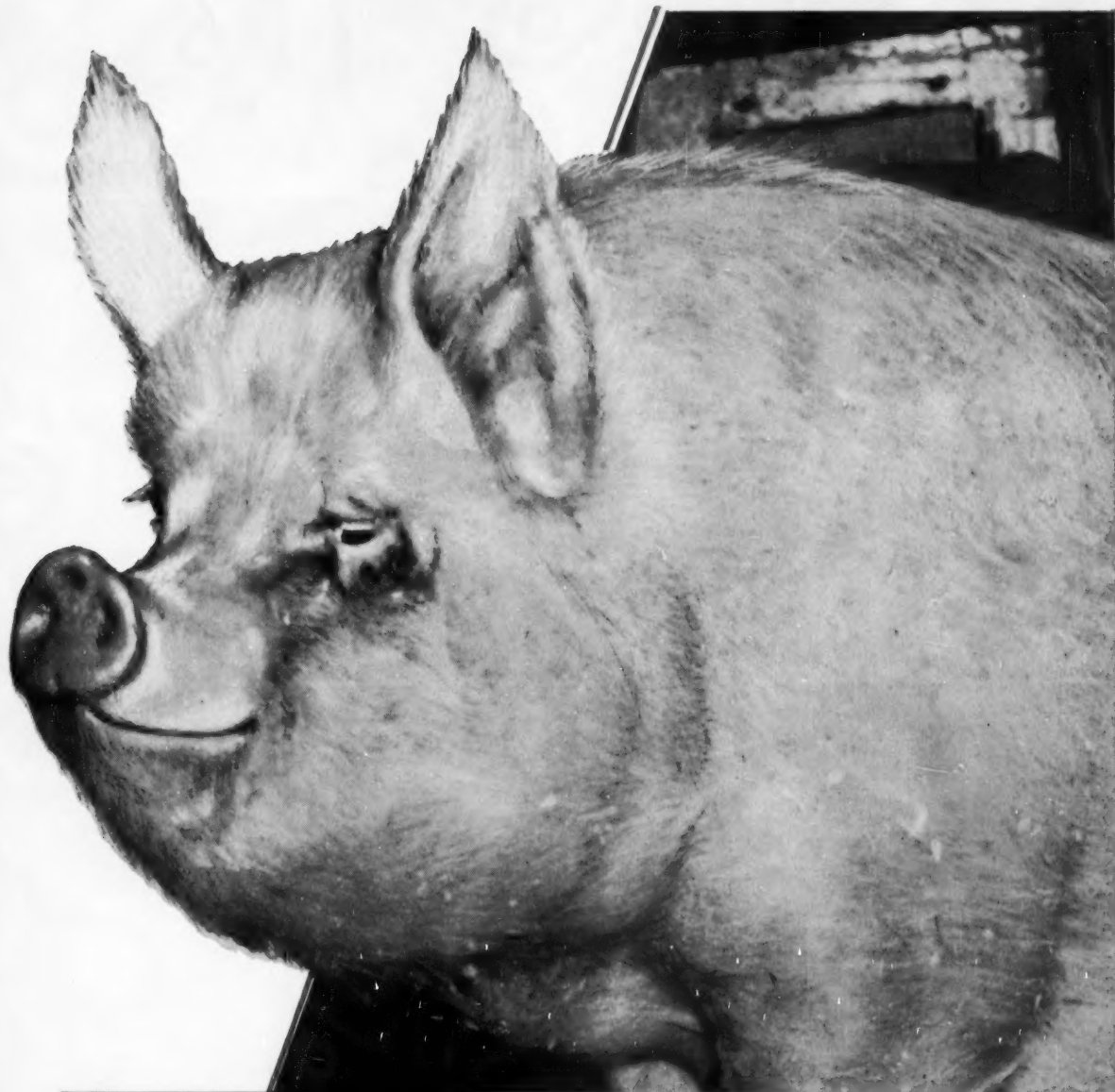


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# GRANULATION, SALES FEATURES AT NFA

The three-day summer convention of the National Fertilizer Association began at The Greenbrier, White Sulphur Springs, W. Va., on Monday, June 14. NFA Board Chairman Louis Ware, International Minerals & Chemical Corp., presided at the opening session, sharing the host's position at the speaker's table with NFA President Russell Coleman.

Mr. Ware introduced Secretary of Agriculture Ezra T. Benson, only speaker on the first day's program, who addressed the group on "Agriculture Moves Toward Useful

Abundance." Following are excerpts from the Secretary's talk.

No one among us seriously doubts the ability of American agriculture to provide in ample abundance the food and fibers we need, now and far into the foreseeable future.

We know, moreover, that we do not have to fear abundance. We have only to learn to use it wisely.

The goal of American agriculture, as I see it, can be summed up in three simple words: useful, permanent abundance. To be useful, abundance must be marketed. That is why this administration is focusing more attention on agricultural marketing than it has ever received before.

For abundance to be permanent, we need to conserve and build our natural resources—we need to safeguard farm prosperity—we need to lay emphasis on farming efficiency, on balanced farming, on new technology, and on the research and education which help to make all these aims possible. Science, research, good techniques, and sound practices can improve these natural resources—can rearrange them—can even restore wasted strength and productivity; but they cannot create natural resources. We can drain swamps, and we can irrigate deserts—but we cannot make land.

In the next two decades we must, in effect, add somewhere between 100 and 165 million acres of cropland or its equivalent to the farm plant. We can expect to have the equivalent of 507 million acres available to meet the needs of our human population. But at the current levels of efficiency, that amount would fall short by nearly 100 million acres of meeting the needs of the population of 1975, using as the population figure the lowest estimate of the Census Bureau. With population at the Bureau's highest estimate, we would need 165 million additional acres—an increase of about a third, which means four acres for every three

actually available.

I need not dwell here on the importance of fertilizers in improving our soils. It is encouraging that you continue to increase your production and that farmers continue to increase their use of plant food materials. Concentration of plant food in the total tonnages is going higher all the time. As you know, the Department is doing research to help you maintain this trend toward a higher analysis product in the interest of economy and efficiency. Our research people believe the problems of maintaining physical condition of high analysis goods can be handled so that it will be possible to raise the average analysis of mixed fertilizers in the next few years to at least 30 percent.

Besides improving our materials and mixed goods, as such, we must continuously study our soil requirements and anticipate our future needs. We know, for example, that many areas of the Southeast may become deficient in sulfur as the trend continues toward use of higher-analysis, lower-sulfur-containing fertilizers. The Department and the Southern States are studying this problem. We have learned so far that only about 5 pounds of sulfur per acre comes down in rainwater in most areas. Once the residual sulfur stored in soils is exhausted, we will probably have to add sulfur in one form or another.

We don't know enough yet about minor element deficiencies. Great interest has been generated by scattered bits of evidence that the lack of certain minor elements may sometimes show up in mineral-deficient forage crops and unhealthy livestock. This is a subject that needs a great deal more study.

Much interest has been created also by a few spectacular results from correcting minor element deficiencies. Out in the Columbia Basin our research men probably saved new settlers a great deal of trouble by learning, before settle-

## KEY TO NFA PICTURES



1. Mr. & Mrs. Jim Totman, Summers Fert. Co., Baltimore. 2. Rucker McCarty, Int. Min. & Chem. Corp., St. Simons Island, Wm. Caspari, Davison Chem. Co., Baltimore. 3. Mr. & Mrs. Wm. Caspari. 4. Tom Athey, Albemarle Paper Mfg. Co., Richmond, Mrs. Lee Turner, Baltimore, Herb Rauchfuss and Earl Gettinger, both with Woodward & Dickerson, Philadelphia. 5. Fred Purcell, Combustion Eng., Atlanta, B. H. Ottinger, Farmers Guano Co., Norfolk, W. N. Glover, Farmers Cotton Oil Co., Wilson, N. C. 6. J. Ross Hughes, Meeker-Hughes Co., Salem, Oreg., Mrs. Hughes, W. R. Allistetter, NFA, Washington, Mrs. Geo. Smith, Dr. Geo. Smith, University of Missouri, Columbia. 7. W. G. Taylor, Catawba Fert. Co., Lancaster, Earl Stanard, Acorn Ref. Co., Cleveland, Mrs. John T. Stevens, Kershaw, S. C., O. H. Stanard, Amer. Limestone Co., Raleigh, Frank Littlefield, Fulton Bag & Cotton Mills, Savannah, Mrs. T. V. Hough, T. V. Hough, Kershaw Oil Mill, Kershaw. 8. Fred Corkill, Pacific Coast Borax Co., New York, Ann Merritt, New York, Martha Naftel, Auburn, Bill Merritt, H. J. Baker & Bro., New York, Mrs. Corkill, New York. 9. Wm. Cromwell, Hudson Pulp & Paper Corp., New York, Mrs. Victor Ericson, Mrs. Walter Meeken, Bill Chadwick, Int. Min. & Chem. Corp., New York, Walter Meeken and Victor Ericson, both with Consolidated Rend. Co., Boston. 10. J. G. Carroll, Mrs. Dallas Culver, Dallas Culver, Huston-Culver Fert. Co., Seaford, Mrs. Carroll, James Rossman, Woodruff Fert. Wks., N. Haven. 11. Elmer D. Young, and John W. Manning, both with Tri-State Chemical Co., Henderson, Ky. Mr. & Mrs. Zach P. Smith, Bluegrass Plant Foods, Danville. 12. Frank Littlefield, Fulton Bag, Savannah. Bill Glover, Farmers Cotton Oil Co., Wilson, Mrs. W. P. Darsie, Walnut Grove, Calif., Frank Greeley, Fulton Bag, New Orleans. 13. J. D. Dawson, Fidelity Chemical Corp., Houston, J. H. Drewry, Int. Min. & Chem. Corp., Shreveport, Mrs. Drewry, O. H. Sale, Fertilizer Equip. Sales Corp., Atlanta. 14. Mr. & Mrs. Robert A. Noor, Gen. Industries, Inc., Philadelphia. 15. James H. Carpenter, Koppers Co., Pittsburgh. 16. A. F. Miller, Swift & Co., Chicago, C. S. Edwards, Nitrogen Products, New Brunswick.







ment, that beans and corn and other crops had to have more zinc than the soil provided. Application of zinc increased yields up to 100 percent. Now we are learning that the availability of zinc to plants depends upon the pH of the soil and upon nitrogen supply.

We have always known that the physical condition of the soil had a lot to do with the water needs of a crop. We have said, for instance, that some soils are "droughty". Now we are beginning to learn that the fertility level of the soil also can affect the way a crop uses water.

Corn grown on a claypan soil requires much less water per bushel when the soil is heavily fertilized than when it is unfertilized. In the experiment that brought out this

fact, not only was yield greatly increased but the amounts of water used per bushel were 5,600 gallons where fertilizer was adequate and 21,000 gallons where no fertilizer was applied.

Now that is a highly significant fact. Everywhere farmers are interested in the efficient use of water. It is the lifeblood of the West, both for irrigated and dryland farming. And in the East, most farms are short at some time during the growing season.

Out in the West many studies are aimed at getting the most efficient use of irrigation water and irrigated land. High altitude mountain meadows are responding remarkably to the right combinations of water, fertilization, and cutting practices. Good response to nitrogen seems to depend on avoiding excessive irrigation and on early harvesting. And high rates of nitrogen application are producing crude protein cheaply.

Applications of 640 pounds of nitrogen per acre in 1952 and 1953 brought the crude protein production up from 407 to 1,683 pounds per acre—that's over a 400 percent increase. That certainly is trading dimes for quarters.

We have also learned that sugar beet production practices need to be geared together with mathematical precision. If you know what irrigation plan is to be followed and how much nitrogen can be obtained from the soil, you can figure exactly how much nitrogen to apply in order to realize the full potential yield of sugar.

Unfortunately, we do not yet have this type of information for each important crop under different climatic conditions, on various soils, at particular moisture levels.

Dryland farming, no less than irrigation farming, requires good management in order to make full use of precious moisture. In many places where moisture has always been the production limiting factor, additions of organic matter and nitrogen fertilizer in recent years have brought responses. In North

Dakota experiments last year, barnyard manure in rotations increased yields of corn, wheat, and oats by from 20 to 64 percent. At various locations in the Plains and the Pacific Northwest, nitrogen has been increasing wheat yields where moisture was normal or better. And surprisingly enough, in very few instances is nitrogen depressing yields, even where large applications are used.

The Plains area—especially the Southern Plains, the Dust Bowl—presents a particularly difficult challenge. In the panhandle of Oklahoma, scientific studies show that about a half-century of farming has taken a fifth of the organic matter and phosphorus from the topsoil and a fifth of the subsoil phosphorus. Plowpans in wheatlands are restricting root development and greatly reducing the rate at which the soil can absorb moisture.

Remember that the Plains crops are great users of nitrogen.

And hovering over the Plains constantly, threatening as a funnel-shaped cloud, is the prospect of drought and the fury of the dry, hot wind. Any permanent solution of the wind erosion problem in the Southern Great Plains includes the retirement to grass of land not suited to cultivation.

We all know that fertilizer is one of the highly important factors in bringing about a satisfactory diversion of thin, unsuitable soil from cultivated crops to grass and legumes.

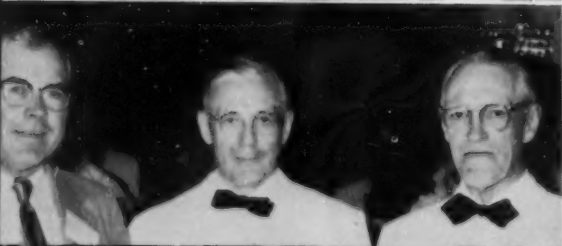
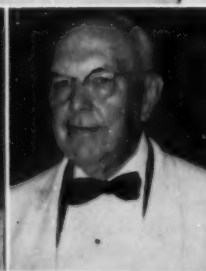
One measure that seems to offer promise for erosion control is the interplanting of grasses and legumes between wide-spaced rows of corn. Wide-row spacing of corn, in Iowa experiments, also shows promise as a means of establishing seedings of legumes and grasses without the use of a small grain nurse crop. In years of normal rainfall, it may be more profitable to establish seedings in wide-row corn than to use a small grain.

The challenge of soil conservation and improvement is a subject that is not as easily exhausted as an audience. I have merely indicated a

## KEY TO NFA PICTURES



1. Erol Becker, John Whitney, Chemical Constr. Corp., New York. 2. A. L. Walker, Jr., Texas Gulf Sulphur, New York. Ray King, Georgia Fert. Co., Valdosta. Ralph Boynton, U. S. Potash Co., Atlanta. 3. Mr. & Mrs. Sy Martenel, R. Rauh & Sons, Indianapolis. 4. Harvey E. Melson, Melson Fert. Co., Georgetown. Jim Rossman, Woodruff Fert. Wks., N. Haven. Wayne M. Miller. 5. Mr. & Mrs. Dallas Culver, Huston-Culver Fert. Co., Seaford. 6. Wm. H. English, Jr., H. V. B. Smith, both of H. J. Baker & Bro., New York. 7. J. R. Myers, Eastern States Farmers Exc., W. Springfield, Mass., Robert H. Engle, NFA, Washington. Joseph A. Chucka, Eastern States Farmers Exc. 8. Mr. & Mrs. Joe Harrell, Southwest Potash Corp., Atlanta. 9. Fred Purcell, Combustion Eng., Atlanta. Harold Kitchens, Stedman Foundry & Mach. Co., Aurora, Ind. 10. Tom Athey, Albemarle Paper Mfg. Co., Richmond. Mrs. A. A. Scholl, New York. Charles Schellinger, Melson Fert. Co., Georgetown. 11. Mr. & Mrs. King Ludington, Chase Bag Co., New York. 12. W. C. Grahn, H. J. Baker & Bro., W. L. Waring, Jr., Lyons Fert. Co., both of Tampa. 13. J. E. Nunnally, and Quentin S. Lee, both with Cotton Prod. Assn., and Gaines L. Boynton, Int. Min. & Chem. Corp., all of Atlanta. 14. Ray E. Neidig, Ralfour. Guthrie & Co., San Francisco. R. Erin McAllister, Consolidated Min. & Smelt. Co. of Canada, Montreal. 15. Mr. & Mrs. B. E. Stewart, Jones & Laughlin Steel Co., Pittsburgh. 16. A. A. Schultz, Reading Bone Fert. Co., Reading, Gordon Cunningham, Tenn. Corp., Atlanta. J. G. Reynolds, Bethlehem Steel, Bethlehem. T. C. Rogers, Nitrogen Div., New York. Tom Athey, Albemarle Paper Mfg. Co., Richmond. 17. Robt. J. Engelhardt and Arthur C. Bright, both with John J. Harte Co., Atlanta. 18. W. A. Webster, Quaker Oats Co., Chicago. John Miller, Price Chem. Co., Louisville. 19. A. H. O'Neil, Freeport Sulphur Co., New York. Mr. & Mrs. Wm. T. Doyle, Sturtevant Mill Co., Boston. 20. W. W. Johnson, Smith-Rowland Co., Norfolk. George Barley, Diamon R. Fertilizer Co., Winter Garden. 21. C. R. Martin, Miami Fert. Co., Dayton. Mr. & Mrs. Joe Stough, Int. Min. & Chem. Corp., Chicago.



few of the problems and a few bits of the new information we are gathering.

We have many, many problems to overcome before our agriculture and our Nation will be at maximum strength—before our goal of permanent, useful abundance will be in sight. We have a long way to go, but we are on our way, and we know where we're going.

The second day's meeting opened with a talk by retiring Board Chairman Louis Ware, who expressed gratitude to the Association's officers, staff and members for their parts in the gains made during the past two years. The following remarks are taken from his report of progress toward the goals set by NFA.

We can be proud of the work that has been done by our technical staff in making a comprehensive analysis of the economics of fertilizer usage, reporting statistical informa-

tion useful to the members and in planning sound advertising material and circulars, designed to foment greater use of plant food. Rather than emphasizing short-term expediences which would serve the quick advantage of the industry alone, our plan has been a broader one using the more basic long-term program of research, education and public relations which is in the best interests not only of our industry but of agriculture and the nation.

The Association has had remarkable success in the publication of books. Our most successful one, **HUNGER SIGNS IN CROPS**, has sold over 100,000 copies and has been a self-liquidating project. It is used as a text book in the Land Grant Agricultural Colleges and vocational agriculture classes, and is recognized by farmers and agriculture leaders as one of the most useful of recent publications. We are now publishing our new book, **THE CARE AND FEEDING OF GARDEN PLANTS**, about which you are informed and which I am sure will be a very successful undertaking.

The Association's office and its staff have represented us well in the nation's Capital, and our President and other officers appeared during the year before many organizations throughout the country. Our business and the goods we produce are often misunderstood and an alert, capable association is needed to continually and effectively tell our story.

One very useful project in the last few years has been that of educating the banks and bankers throughout the country on the value of fomenting better use and larger use of commercial plant food in their areas. It was surprising to learn how many financial people in various communities had heretofore not appreciated the value of the plant food and how the use of its products made possible increased wealth in their areas. Over 1,000 individual banks have asked to be placed on the mailing list to receive the **NFA REVIEW**. While primarily intended for professional agriculturists, its circulation, now nearly 40,000, includes persons in almost

every type of work related to agriculture.

The Association has been most helpful in following closely research work at various institutions throughout the country and making available reports to the industry.

Think back a short two years ago. Very seldom did one hear of the part fertilizers could play in reducing farmers' unit production costs. This searching, comprehensive analysis of the economics of fertilizer usage also has served to spotlight a basic principle which can contribute immeasurably towards the solution of the nation's agricultural problems. When a farmer is forced to cut back his production this usually is tantamount to a cut in his income. If, however, he can at the same time increase his margin of profit on each bushel or each pound he produces, it may be possible for him to maintain—even increase—his income even though his total production has been cut back.

The benefits of our industry's market development program can be measured in consumer demand for fertilizer. During the past two years, despite a 16% decline in farm income, the consumption of plant food has increased by about 10%.

Motion pictures produced by NFA continue to be effective educational tools. The latest film, produced over a year and a half ago, was a smash hit. Production has been started on two new films, one on soil sampling and the other on the opportunities for increasing the use of plant food through supplemental irrigation. Both films are expected to be ready for release this Fall.

One of the most important of NFA's services to its members deals with the manufacturing phase of fertilizer technology. Significant strides are rapidly being made in the development and application of new and improved methods of fertilizer production. The Association has assumed a position of leadership in both fostering these new developments and in keeping its membership posted.

The development and application of new equipment for ammoniation of fertilizers is an excellent example

## KEY TO NFA PICTURES



1. Mr. & Mrs. G. A. Coleman, Nitrogen Div., Petersburg, Va. James H. Carpenter, Mr. & Mrs. M. W. St. John, all with Koppers Co., Pittsburgh. 2. Dr. & Mrs. R. P. Thomas, Int. Min. & Chem. Corp., Chicago. Dr. L. B. Nelson, USDA, Beltsville. 3. Mrs. Mabel McConnell, Atlanta, Travis Whitsel, Union Spec. Machine Co., Chicago. Mrs. Whitsel. 4. Bennett Brown, Knoxville Fert. Co., Knoxville. Joe Harrell, Southwest Potash Corp., Atlanta. 5. Mr. & Mrs. J. H. Walthall, TVA, Sheffield. 6. Harry Hughes, New York. C. C. Keefer, Louisville, both with St. Regis. 7. George Lippincott, and Enos Valliant, both with Dorchester Fert. Co., Cambridge. G. F. Wilkins, Jefferson Lake Sulphur Co., Wendell, Iowa. 8. Jack Ryan, Fulton Bag & Cotton Mills, St. Louis. S. R. White, Spencer Chemical Co., Chicago. 9. Mr. & Mrs. W. J. Murphy, Amer. Potash & Chem. Corp., New York. 10. Philip Shuey, Shuey & Co., Savannah. J. G. Reynolds, Bethlehem Steel Co., Bethlehem. Gordon Cunningham, Tenn. Corp., Atlanta. 11. Dr. & Mrs. Fielding Reed, Amer. Potash Inst., Atlanta. 12. Trenton Tunnell, Ashcraft-Wilkinson, Atlanta. Eugene German, Duval Sulphur & Potash Co., Houston. John S. Foy, Ashcraft-Wilkinson, Atlanta. 13. Mrs. Gene Van Deren, Cynthia, Sid Rydell, Coronet Phos. Co., Norfolk. 14. Mr. & Mrs. Angus M. Taylor, Jr., The Chem. & Indust. Corp., Cincinnati. 15. O. H. Sale, Fert. Equip. Sales Corp., Atlanta. J. O. Hardesty, USDA, Beltsville. Ed Kapusta, NFA, Washington. 16. Fred Lodge, Washington. 17. W. L. Waring, Jr., Lyons Fert. Co., Tampa. Mr. & Mrs. Chas. Rau, E. A. Rough & Sons, Indianapolis. 18. J. A. Chucka, Eastern States Farmers Exch., W. Springfield. E. S. Russell, Old Deerfield Fert. Co., S. Deerfield. W. L. Gay, Berkshire Chemicals, New York. 19. Mr. & Mrs. John C. Molony, Molony Fert. Co., Charleston. 20. Mr. & Mrs. A. L. Schneider, Stedman Foundry & Machine Co., Aurora, Ind.



of the success of this phase of NFA's activities.

Through its monthly publication — Fertilizer Process Progress — authoritative, up-to-date information on new advances in fertilizer manufacturing is supplied to fertilizer manufacturers and technologists.

To cover in detail all of NFA's activities would require more time than is available. The work of the various committees such as the Plant Food Research Committee, Traffic Committee and the Joint Committee on Fertilizer Application, are well known to most of you. There is still so much work to be done, and there was never greater need by an industry for an able, competent, well-staffed trade association. I think all our membership can take pride and satisfaction in the present work of our Association and it is well equipped to continue to be of great service and of much use to the industry in the years ahead.

At the close of his message, Mr. Ware introduced the featured speaker of the day, Honorable W. Sterling Cole, congressman from New York who is chairman of the Joint Congressional Committee on Atomic Energy. Representative Cole's speech, in condensed form, is presented below.

For more than a decade, we have been occupied almost entirely with the atom as a military weapon. We still are primarily concerned with that objective, but no longer with such exclusivity. We are at a stage of weapon know-how and weapon availability so that we can afford to devote an increasingly larger proportion of our scientific and industrial efforts toward the peaceful side of the atom.

The fertilizer industry will receive indirect benefits growing out of the applications of atomic energy in agricultural research. The radioactive isotope is enabling us to learn just how a plant uses the foods in the soil in which it grows and prospers. This leads to a better understanding of the functions of fertilizers in plant growth. It has also brought into new prominence such novel processes of plant nutrition as foliar feeding. All of these will lead

to a better understanding of how crops grow and how and when plant foods should be applied. This can normally be expected to lead to a higher consumption of fertilizers by the farmer, for when one can predict clearly the results to be expected from any application of fertilizer the economic arguments for its use tend to become quite compelling.

The Joint Committee recently received testimony from nine of the country's leading agricultural scientists on the contributions of atomic energy to agriculture. I think you people in the fertilizer industry would find it most interesting reading. Printed copies are available from the Committee and the public

printer.

I think we can all take great pride in the fact that the peaceful atom is already doing so much to repay the taxpayer for his investment, and promises to return its initial cost manyfold in the next generation. At the same time, the military atom is helping protect the nation and the free world from the onslaughts of predatory Communism, and is giving us needed time in which to work out a peaceful solution to our world problems.

The fertilizer industry is in the fortunate position of being both a supplier of uranium for the atomic energy industry and a beneficiary of the research products of the peaceful atom.

## NFA ELECTIONS



**GEOGHEGAN**

**E. A. Geoghegan, Vice President, The Southern Cotton Oil Company, New Orleans,** was elected chairman of the board of directors of The National Fertilizer Association at its 29th annual convention. He succeeds Louis Ware, president of International Minerals & Chemical Corporation, Chicago, who completed a two-year term as NFA board chairman June 16.

**C. T. Prindeville, vice president, Swift & Company, Chicago,** was elected vice chairman of the board, succeeding Mr. Geoghegan.

**Reelected president of the Association was Russell Coleman, Washington.** Also reelected were **W. R. Allstetter, vice president,** and **William S. Ritnour, secretary and treasurer, both of Washington.**

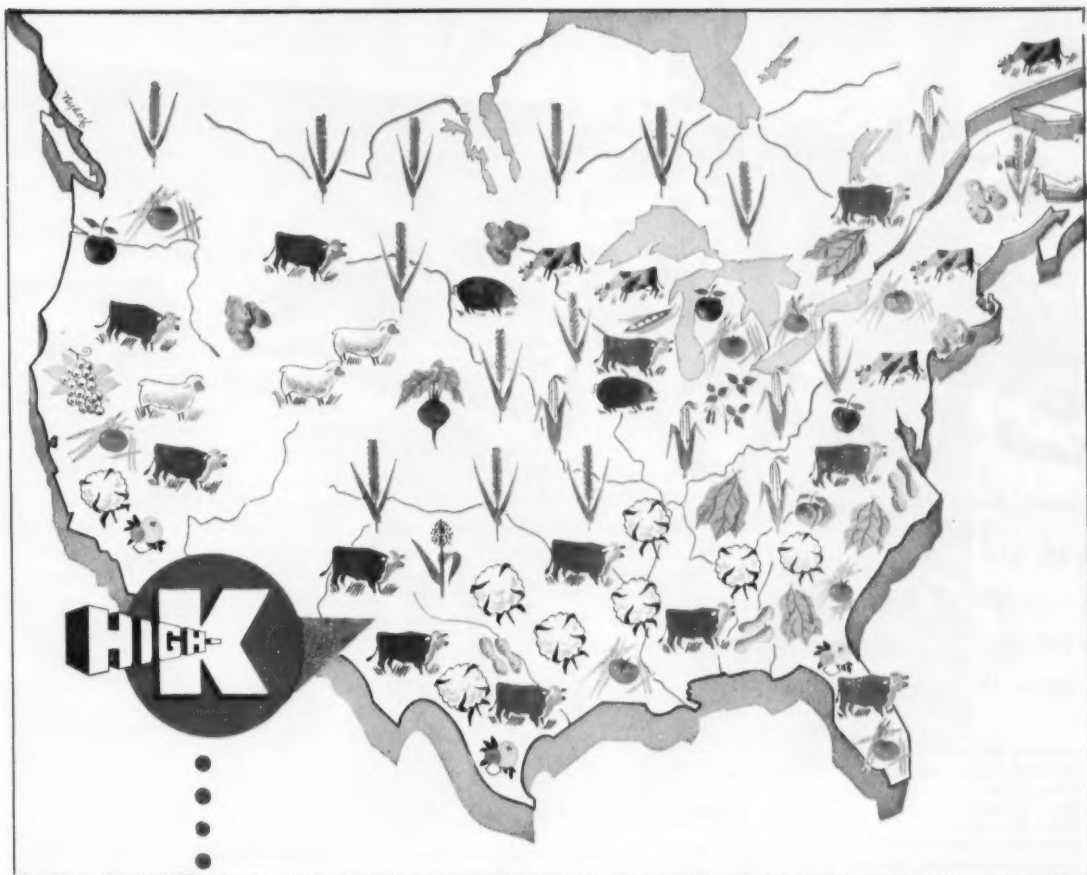
**Weller Noble, retired president of the Pacific Guano Company, Berkeley, Calif.,** was elected to honorary life membership in the Association. Mr. Noble has been a long-time member of the NFA board of directors and also has served as board chairman.

**R. L. Hockley, Mathieson Chemical Corporation, Baltimore,** was elected to the board as a director-at-large. New district directors include **Bill Nichols, Sylacauga Fertilizer Company, Sylacauga, Ala.; Edward J. Buhner, Buhner Fertilizer Company, Seymour, Ind.; Edward R. Jones, Apothecaries Hall Company, Waterbury, Conn.; and B. H. Jones, Sunland Industries, Inc., Fresno, Calif.** Other members of the board whose terms had expired were re-elected.

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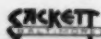


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Following Congressman Cole's speech, several business matters were brought before the group. The report of the Nominating Committee, presented by Chairman James E. Totman of Summers Fertilizer Co. in Baltimore, was accepted. The budget was approved as submitted by Budget Committee Chairman J. H. Epting, Epting Distributing Co., Leesville, S. C. And the memorial record was offered by Bennett E. Brown, Knoxville Fertilizer Co., Knoxville, Tenn.

That evening featured the annual convention dinner and a program of entertainment and dancing.

Wednesday morning, final meeting of the convention, saw a split session in the form of two separate symposia held simultaneously in two different locations at the hotel. Each workshop dealt with one of the most important phases of the industry, and invited audience participation. Summaries of the panel talks are presented as follows:

### What Makes Fertilizer Move

H. H. Tucker, president of Coke Oven Ammonia Research Bureau, moderated the group, introducing the panel members and guiding the discussion and questions.

**O. E. Anderson, Secretary  
Ohio Bankers Association**

Every time I take a look at this question of adequate credit in the movement of fertilizer from manufacturer to farmer and the possible role of the country banker in that cycle, I frequently wonder who's really kidding who.

Naturally, I can understand your concern. Here is an industry faced with the probability, or perhaps even the certainty, of a 20% increase in the production of plant food for the 1955 crop year. Many of you recall that it took a bit of doing to move this year's production at the right time with maximum satisfaction to all concerned and with a minimum of your cash tied up in accounts receivable. You probably have a right to be a bit worried about the prospects for next year,

particularly on that matter of accounts receivable.

I intend to speak rather frankly, even though my opinions may be to a degree incorrect or overdrawn or oversimplified.

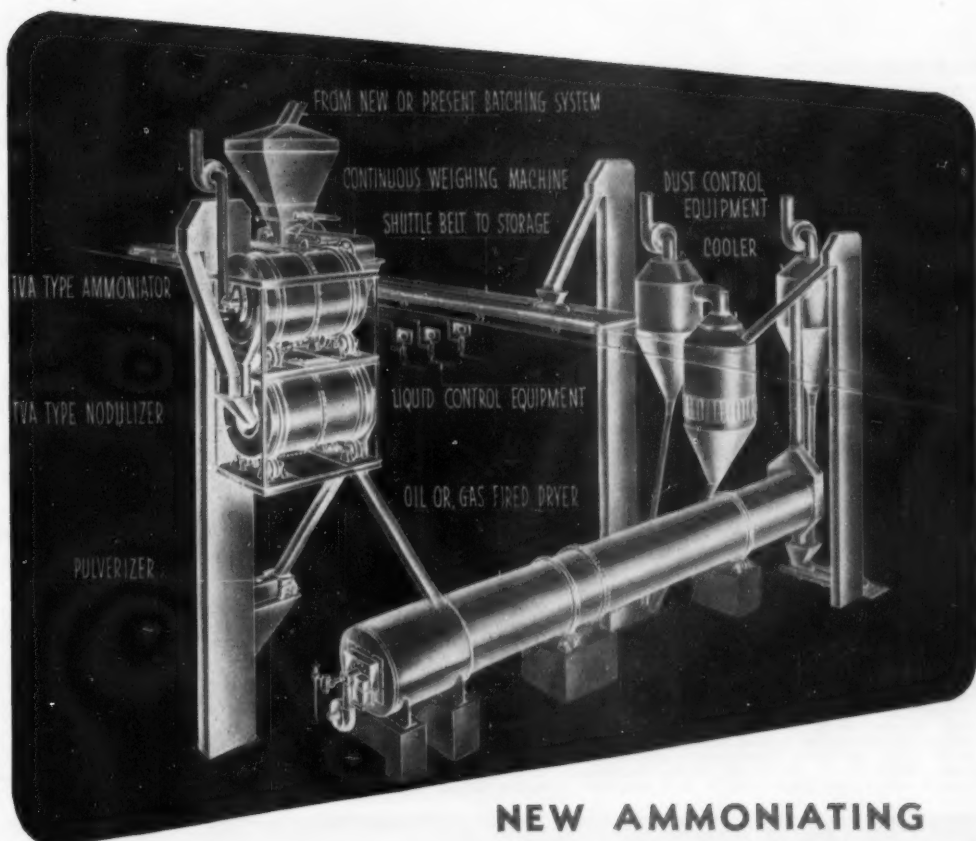
To begin with, it's absolutely necessary for your industry from top to bottom to admit its own faults in the field of credit before an overall solution is possible.

Second, it's equally necessary for you to realize that no one single answer will cover your entire problem, for the problem is just as many-sided as there are fertilizer manufacturers, retail dealers, and individual farmer customers. You might as well throw in the banks, too, for they are part of the problem, certainly.

Basically, what I know about the fertilizer industry you could put in one small furrow without making any noticeable effect on the general production of information. But over the last several years, a few things have impressed me.

For instance, I sometimes seriously doubt whether the average fertilizer dealer is really interested in having banks or anyone but himself handle the credit needs of his customers. Quite naturally, the basic manufacturer maintains friendly relations with the major banking centers of the country, due to the simple fact that he finds it necessary to stockpile all his raw ingredients for a full year's production long before he ships a single sack of mixed goods. It takes a mighty good credit rating to do a job like that, and the men at the top in your business appear to be doing an excellent job in that respect. It's only too bad that they fail to spend an equal amount of time and brains in working out the credit problems at the retail end of their industry.

I also wonder quite frequently what the words, "cash discount" really mean to a fertilizer manufacturer. It is obvious that far too often cash discounts are granted to retail outlets several weeks or even months after the goods are shipped, and perhaps even sold, to the farmer. Too often, perhaps, these ship-



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Superphosphate and mixed goods producers are invited to get our seasoned counsel on their expansion and modernization programs. It is available at no cost.



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ments are nothing more than consignment sales to dealers.

Still another fact of the problem seems to be the occasional use of guaranteed maximum margins to the dealer, protecting him from plain business losses if the price structure should happen to weaken during the season, yet giving him a firm ceiling even though prices may strengthen during the same period.

It seems to me that these are conditions primarily governed by two factors. One is the understandable but hardly forgivable desire on the part of the manufacturer to start moving his production as early in the season as possible because his inventory costs are so tremendous. He looks at those inventory interest rates along in January and gets a

little panicky feeling up and down his spine and at times is willing to make all kinds of concessions to assure himself of empty warehouses by the end of the shipping season.

The other factor, of course, is just plain competition.

The answer to those conditions lies solely with your industry, but I am certain the answer can be found.

There are approximately 12,000 banks in the United States of America with resources of less than \$10 million each, that can truthfully be classed as country banks. They are the institutions which must handle practically all the credit needs of your industry at the level of the retailer and the farmer if anyone is to do it properly and completely.

Now, right at the start I will certainly be the first to admit that the average country banker knows very little about this problem. Even though he may have grown up in a farming community and is well acquainted with the local fertilizer dealers and most of the farmers of his section, still his knowledge of modern farming practices is definitely limited. Agriculture has simply marched too fast in the past 15 years for him to have more than a hazy conception of the vast technological and mechanical progress made by the American farmer. Therefore, if he is to help you meet this problem, he must be better educated.

That is a two-fold job and you can assist in accomplishing it.

1. Mr. & Mrs. John B. Zimmer, Southwest Potash Corp., New York. 2. Charles M. Martin, International Minerals & Chem. Corp., Chicago. Ralph Fraser, Summers Fertilizer Co., Baltimore, and Vincent Sauchelli, Davison Chem. Co., Baltimore. 3. Bob Heuerman, International Minerals, New York. Joe Manasse, Werthan Bag Corp., Chicago. M. S. Malone, International Minerals, Atlanta. 4. C. L. Straughn, Amer. Potash & Chem. Corp., Atlanta. Marshall A. Smith, Smith Agric. Chem. Co., Columbus, O. 5. Judge & Mrs. D. S. Murph, Winnsboro, S. C., Fred Lodge, Washington. 6. Paul Soule, Grand River Chem. Div., Tulsa. Mrs. Soule, R. H. McGough, Brea Chemicals, Los Angeles. Mrs. McGough, Harvey Fifer, Brea Chemicals. 7. Mr. & Mrs. Jim Devlin, Southwest Potash Corp., New York. 8. Earl Stanard,

The Acorn Ref. Co., Cleveland. O. H. Stanard, Amer. Limestone Co., Raleigh. Bruce Cloaninger, Assoc. Amer. Fert. Control Officials, Clemson. Henry A. Davis, President, Assoc. Amer. Fert. Control Officials, Durham, N. H. 9. Carl Shirk, Chemical Packaging Corp., Savannah. Mrs. Shirk, Jack Rutland, W. Carolina Phos. Co., Waynesville. 10. F. S. Lodge, Washington. Dr. K. D. Jacob, USDA, Beltsville. Mr. & Mrs. "Dugan" Taylor, Grand River Chem. Div., Tulsa. 11. W. Gedge Gayle, Kelly, Weber & Co., Lake Charles La. Mrs. Gayle, Shirley Sue and W. Gedge, Jr. 12. Mr. & Mrs. Wm. Chadwick, International Minerals, New York. Mr. & Mrs. Vernon Bishop, Lebanon Chem. Corp., Lebanon. 13. Mr. & Mrs. S. P. Rozas, Amanda and Paul Rozas, Kelly, Weber & Co., Lake Charles.





Every dealer outlet which you serve should be encouraged frequently and consistently to contact his local banker well in advance of each sales season and give him a detailed picture of the prospective movement of fertilizer in that community, the names of farmers who are likely to need assistance through direct bank loans, plus a general analysis of any trouble spots that might possibly develop.

Any banker worth his salt is as willing to take over the credit obligations of a fertilizer dealer as he is the paper of an automobile dealer in the community. What I mean to imply is that a bank is in business to loan money and credit extended for plant food purchases is just as sound, with or without collateral, as

are loans granted for the purchase of any kind of equipment.

Don't, however, make the mistake of selling a banker on granting plant food loans that are not likely to produce good results. Both you and the banker are in business to stay and repeat business can only be gained by developing mutual confidence.

It is my firm conviction that both the dealer and banker should know enough about the individual farming practices in their area to recognize whether the type of fertilizer being purchased, the quantity, and the cropping practices are apt to produce good results.

Without a knowledge of those three conditions, the dealer may be selling a farmer a complete lemon and the banker may as well be pour-

ing his depositors' money into a hectic stock market.

Bankers associations such as our own in Ohio are making a really conscious effort to awaken our members on the following points.

First, the fact that they have a definite obligation to make all the sound farm loans that they can possibly handle.

Second, that they lean heavily upon retailers in the fertilizer and farm supply field as a ready source of sound advice and information, and

Third, that they become thoroughly acquainted with modern-day agriculture and with its needs and opportunities in their home community, for we are convinced that only with such knowledge can they

1. Mr. & Mrs. Harold H. Smith, U. S. Dept. Commerce, Washington. 2. Mr. & Mrs. F. E. Smith, Jr., Potash Co. of America, Washington. 3. Mr. & Mrs. W. S. Tyler, Longhorn Engineering Co., Sulphur Springs, Tex. 4. Mrs. Bolinger, John Bolinger, Miss. River Fuel Corp., St. Louis. Richard A. Brown, The Dickerson Co., Philadelphia. 5. Mr. & Mrs. John Perryman, R. D. Cole Mfg. Co., Newnan. 6. Mr. & Mrs. J. T. Whitely, Grace Chem. Co., New York. 7. Ed Anderson, Int. Minerals & Chem. Corp., Chicago. Mrs. Walton Dennis, Raleigh. Mrs. Henry Weil, Goldsboro, Walton Dennis, Int. Minerals & Chemical Corp., Raleigh. 8. Charles D. Lowry, Jr., Bode-Lowry Assoc., Chicago. 9. Mrs. Lee Andrews, Jim Baskin, Int. Min. & Chem. Corp., Orlando. June Daly, George Barley, Diamond R. Fertilizer

Co., Winter Garden, Fla. 10. Mr. & Mrs. Bob Linderman, Int. Min. & Chem. Corp., Atlanta. Mr. & Mrs. Clay Davis, Woodward Iron Co., Woodward, Ala. 11. N. A. Lockett, Foremost Fertilizers, Leesburg, Fla. Mrs. Wm. Morgan, Chicago, Byron Herlong, Foremost Fertilizers. 12. John A. Campbell and Harry A. Medley, both with Plant Food Corp., Los Angeles. 13. Mr. & Mrs. E. M. Kolb, Amer. Potash & Chem. Corp., New York. 14. Wm. Cromwell, New York. Mr. & Mrs. Harry Rafferty, Chicago, all with Hudson Pulp & Paper Corp. 15. Mr. & Mrs. M. Tegtmeyer, and Ann, Synthetic Nitrogen Prod., New York. 16. Phil Stocker, and C. A. Johnson, both with Land 'O Lakes, Minneapolis. Wayne Walker, H. J. Baker & Bro., Baltimore.



be of maximum help to their farmer customers.

We in the Association field frequently participate in conferences of various kinds toward this end. In cooperation with your own National Fertilizer Association, we have issued and will continue to issue literature which drives home those points to the bankers. We are attempting to build well-founded programs through our agricultural committees and in cooperation with the Agricultural Extension services, in an effort to demonstrate the vital tie between good farming practices, adequate and well-planned credit, and sound economy for our country.

There are even times when I believe that we are making some headway.

**Harold R. Dinges**  
**Director of Product Sales**  
**Spencer Chemical Company**

I always look at selling as a two-headed axe. One blade being straight, conventional selling; the other, which I consider far more important, the job of sales development. Selling, as differentiated from sales development, is getting a share of a market which already exists. It is the kind of job done by the automobile people or the appliance manufacturers. There is no conceivable way anyone could develop new uses for automobiles in substantial quantities. Consequently, every salesman of automobiles is possessed of just one idea. That is, to get just as much of the existing market as he can for his particular brand name.

Sales development on the other hand is the utilization of human ingenuity and imagination in thinking up new ideas, new gimmicks, new approaches, and sometimes new technologies to create new or enlarge existing markets. While the fertilizer industry has done a tremendous job in selling, I feel the industry has done a completely inadequate job from the sales development standpoint. Sales development programs are somewhat akin to religious movements. They need the inspiration and enthusiasm generally reserved for great causes. They need a high degree of altruism and some large measure of selflessness to be successful. All causes, movements, or sales development programs must have a focal point to which all individual energies can be directed. One of the probable rea-

1. Russell Coleman, NFA, Washington, Ezra Taft Benson, Secretary of Agric., Washington, Louis Ware, Int. Min. & Chem. Corp., Chicago. 2. J. O. Hardesty, USDA, Beltsville, Ed Kapusta, NFA, Washington, L. D. Yates, Div. Chem. Dev., TVA, Robt. J. Engelhardt, John J. Harte Co., Atlanta, W. W. Coffin, Link-Belt Co., Chicago. 3. Fertilizer Movement Panel: H. H. Tucker, Coke Oven Ammonia Research Bur., Columbus, O. E. Anderson, Sec. Ohio Bankers Assn., Harold R. Dinges, Spencer Chem. Co., Kansas City, and George E. Smith, Prof. Soils, University of Missouri. 4. Sterling Cole, Atom. Chem. Engineering Comm. 5. Mrs. J. V. Rogers, Little Rock, Mrs. C. C. Crawford, Bartlesville, Mrs. Joe Harrell, Atlanta, Mrs. R. H. McGough, Los Angeles, Mrs. D. H. Bradford, Halls, Tenn., Mrs. Tom Camp, New York, Mr. J. Vuillequez, New York, Mrs. S. L. Nevins, Baltimore, Mrs. E. L. Figgs, Halls. 6. Secretary of Agriculture Benson and family.





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sions the fertilizer industry has not yet developed any inspirational feeling toward this great sales development job, which lies before it, has been the lack of a banner to rally around. Maybe this is a great weakness of the fertilizer industry. The need for this inspirational approach is here, but our energies are frit-

tered away in various directions and wasted away on inconsequential detail, because no one has yet been big enough to raise the banner and provide the direction into which our energies should be channeled.

If this were a debate a strong case could be made for the negative by saying, "Just look what we have

done." It could be said, "If you think the fertilizer industry hasn't done anything, how do you explain the threefold increase in fertilizer consumption in a ten-year period?" This is a telling argument, and we could spend the rest of our days debating as to what part of this increase was due to the college experiment stations; just what part was due to the extension services; just what part was due to the basic manufacturers, the vocational agricultural teachers, the fertilizer manufacturers, the U. S. Department of Agriculture, the dealers, and even the farmers themselves, without any aid from the agencies beforementioned.

My refutation would be, "Let's don't look at the past. Let's look to the future and the job yet undone." The job is tremendous. For example, take a state like Indiana where in the year 1952 they used 840,000 tons of fertilizer on six major crops. If they had followed the recommendations of the college, which are by necessity conservative they would use a million and a half tons on the six major crops in the state. This would represent a 93% increase. In just one particular state the market could be doubled if the efforts were aroused and directed in the proper channels toward the correct end.

It could be expected that the saturation point would by this time be approximated in South Carolina yet in the year 1952 they used about 825,000 tons of fertilizer on eight crops. If the farmers in South Carolina followed the recommendations of the college, the consumption of fertilizer in the state would be well over 3,000,000 tons. This would be roughly a 265% increase. Here again is a market where if the proper ideas were applied in the proper direction, a market would be increased by two and one-half times. I have not studied the figures for all the states where fertilizer use is relatively new. A similar study for Missouri shows the possibility of a six-fold increase, and for Ohio a three-fold. A nationwide study and consideration of this potential alone should be enough to stimulate the organization of some positive mech-

COMMERCIAL FERTILIZER



anism to carry out a more effective sales development program directed toward the maximum development of this potential.

There are many other plus benefits that can be considered also. Take for example, application. Almost as much lip service has been given to the fall application of fertilizers as there has been to the pasture programs. Some small gains have been made, but there has been no systematic approach to the problem whatsoever. One of the great problems of the fertilizer business is its seasonality. As the trend is to higher capital investment in plants it is becoming a greater burden to each of you. Many fertilizer manufacturers operate "in the red" for the first six or seven months of the fiscal year and at the same time tying up every available dollar of owned and borrowed capital in inventory. Consequently, when the fertilizer movement begins in the spring they are already psychologically conditioned to a liquidation sale rather than an aggressive selling program. Just think of the dollars of plus value in every ton of fertilizer sold from July through January. Some objective, analytical-minded observer could not help but think that manufacturers would long ago have dedicated adequate sums of money to a well-thought, logical program, which would by now have done something concrete in encouraging more fall application on a national basis. Maybe the answer is that no one yet has been big enough to raise the banner.

I hope the tone has been provocative of thought, rather than critical. Surely that has been meant. In any event it seems as though I have talked myself into a position where something more concrete should be offered. What I am going to say hereafter certainly will not stand up as a completely thought-out program. The sales development work I envision for the fertilizer business can be divided into two categories. That which is done individually and that which is done collectively.

First, let me speak of what individual efforts can be made. Ever since I have been in the fertilizer



1. Ray King, Georgia Fert. Co., Valdosta, J. E. Nunnally, Cotton Prod. Assn., Atlanta, Jack Cope, Reliance Fertilizer Co., Savannah. 2. Robble Robinson, Atlanta Utility Works, East Point, E. T. Evans, Mid-Way Soil Center, Decatur, Ill. 3. E. S. Russell, Old Deerfield Fert. Co., S. Deerfield, B. B. Fall, Rogers & Hubbard Co., Portland. 4. Earl Lee, Tenn. Corp., Atlanta, Borden Chronister, Nitrogen Div., Hopewell. 5. Henry Maddux, Synthetic Nitr. Prod., Raleigh, Mr. & Mrs. D. H. Banks, Banks Fert. Co., St. Matthews, S. C. 6. Dr. K. D. Jacob, USDA, Beltsville, Ed Harvey, Nitrogen Div., New York.

business, I have heard at least once a week that the dealer is the weakest link in the chain of distribution. I have never yet heard one voice raised in refutation of this statement. Obviously, it is one of the truisms that we have accepted in our industry. It is my private opinion that as long as the fertilizer business cannot afford to pay dealers as full time fertilizer salesmen, the problem will never be solved. In general, I do not see where the industry can afford to support its dealers as full time fertilizer men. Consequently, we will always have this problem. I expect to hear twenty years from now that the fertilizer dealer is the weakest link in the chain of distribution. If this is the situation we are going to have to live with, and I think we are, then we must make concrete plans to improve this situation. As the dealer is admittedly weak on the sales angle, we cannot expect much from him in productive development of new markets.

What is the remedy? I don't know all the answers but I will suggest one. Every fertilizer manufacturer who has a sales organization on the road, should plan a sales development program whereby each one of

his salesmen will get at least five farmers per year to either use fertilizer on crops where they have used none before, or try increased rates above normal application on crops he has fertilized in the past. This takes some thought and ingenuity in educating the salesmen to be able to do this kind of job. It is surprising the amount of good that can be done with some simple ideas when they are taken direct to the farmer. For example, if you can get a few farmers to make one extra pass down the field after they finish, and then one or two passes across the field, you then have several areas with a double rate application and one or two areas where the spreader overlapped with a triple application. It is simple, but is good sound sales development work, and it gets results.

When we speak of what can be done collectively, we come to a real problem. It will be obvious to anyone who makes even a cursory study of the fertilizer industry that there is no collective organization or authority through which all our sales development energies can be channeled. Occasionally, individual companies have addressed themselves to parts of this gigantic task.

## Imagination at work

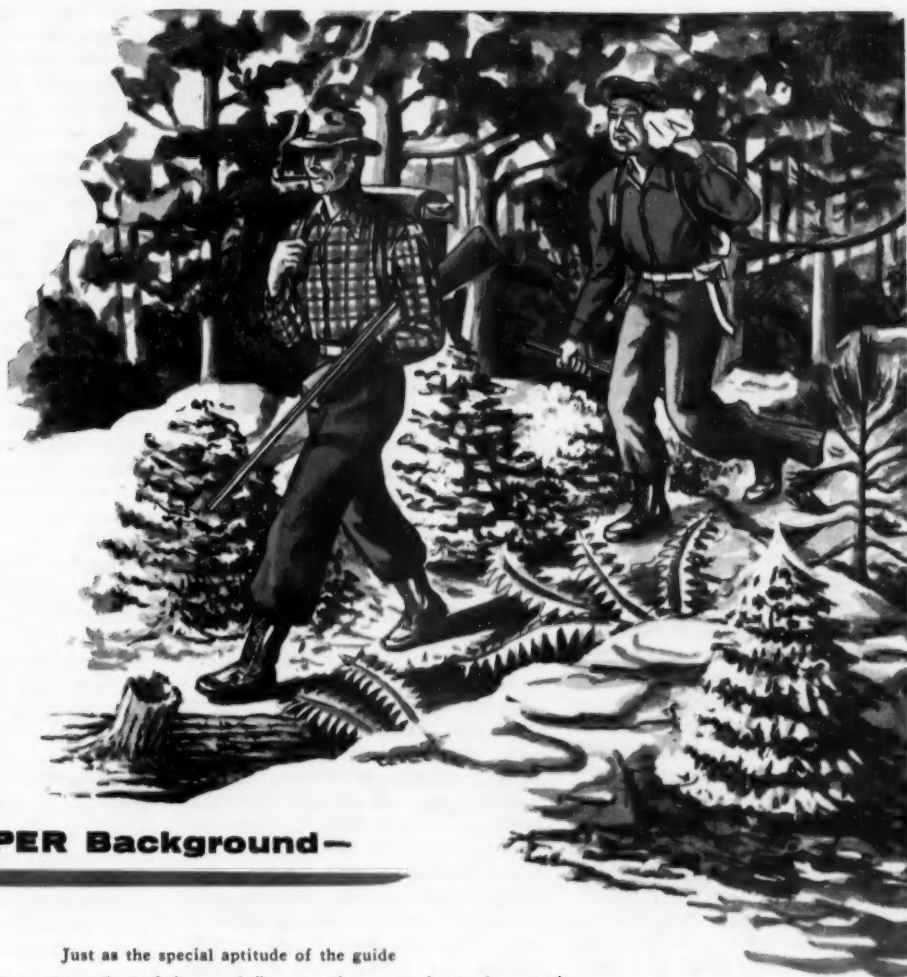
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They have been hampered seriously by the consideration that any progress affects all about equally, irrespective of the efforts put forth individually. Their investment of time and money confers almost equal benefit on the non-participating competitor. In the main the job has been left up to the colleges, with a wide area between the objectives of the colleges and the objectives of the individual fertilizer manufacturers remaining uncovered. At one time it appeared the state plant food societies would be the answer to the problem—organizations along the lines of the one we now have in South Carolina and Georgia—but it now appears their efforts, while being extremely worthwhile and commendable, will not be sufficient to do the job. If nothing on a bolder scale can be done, then they are at least a partial answer. What I am talking about will require large amounts of money and full time effort given to the generation of sales development ideas and programs.

The USDA made an attempt in this direction shortly after the announcement of the second fertilizer goals, but because their program was not specific enough or else did not have the proper manpower delegated to see that it was consummated, very little came of it.

This thing is just too big and too important to the fertilizer industry to be done piecemeal. It is too big for the colleges alone. It is too big for the state plant food societies, that are only now formed in a handful of states. It appears that the real answer lies in the hands of one of the two fertilizer associations. Maybe NFA is big enough to raise the banner for this cause. NFA is financially sound. It is already staffed with people who see and understand this problem as thoroughly as anyone. The Association has already made the break from the concept that it is only an information bureau and has made important steps in the direction of developing information, ideas, and technologies for its members. It has already made important contributions towards the solution of this sales development problem. The very type of its membership and their geographical location would be a



This is the plaque won by a Junior Achievement company sponsored by Bemis Bro. Bag Company. The Juniors took first place nationally in sales.

great asset in contributing to a program of this type. It would not take major readjustments from its present plan of organization to set up a mechanism to, at least, begin on this problem.

As an idea to start on they might consider putting several men skilled in the art of agricultural promotion in several regional offices in strategic parts of the country to act as initiators and coordinators or any programs that would be decided upon for that region. In any proposal, money always rears its ugly head. Just as a suggestion, the administration of such a program might be supported by the funds already available to the National Fertilizer Association. The actual operating budget, which might be comprised of grants in aid to universities, financial support of specific studies that would lead to a concrete program, financial support of demonstrational plots, or providing the funds necessary for crop growing contests, and publication of the results and findings of the universities, would be derived from funds supplied by contributions from all the industries benefiting by the increased use of fertilizer. As a partial list there would be the suppliers of the basic raw materials, the manufacturers of bags, the fertilizer manufacturers, the state banker associations, the power and light companies, the railroads and trucklines, and even the fertilizer dealers.

If such could be accomplished what would we use for a program? Experience has generally shown once a program of this type is start-

ed, there is never a dearth of usable ideas. As a suggested starting program, take the problem of fall application. What could be a better program than to systematically take all the crops in every state where fall application could be considered remotely feasible, and as a starting point initiate a research program on every crop to demonstrate from the economic viewpoint, exactly what the difference is between conventional fertilizing and fall application. Even though we have put a lot of emphasis on sidedressing, a large part of the corn planted is still fertilized by the plowdown method. It is my hunch that in the large part of the areas where corn is a major crop, fall application would show very little difference in economic response from fertilizer applied in the spring.

That is a rough outline of just one possible program. Many others ranging from pure research to dealer education programs could be drawn up in great detail.

I may not have given you any good ideas as to what makes fertilizer move at present, but I am just as firmly convinced as I am of anything in this world that what will make fertilizer move in the future will be the kind of sales development job we, as the fertilizer industry, begin to do right now.

**George Smith**  
Professor of Soils  
University of Missouri

The regular use of fertilizer nutrients is rapidly becoming a standard production practice on Midwestern farms. Past beliefs that the soils of this area contained sufficient nutrients for many future crops and the use of chemical fertilizers would cause injury in dry seasons are rapidly disappearing. The high food-producing states of the Midwest have shown the greatest percentage increase in fertilizer usage of any in the past 10 years. Missouri's fertilizer usage increased from less than 1% of the nation's total in 1939 to over 3½% in 1953. Despite crippling droughts in 1952 and 1953, estimates are for the largest use of plant nutrients on record during the first

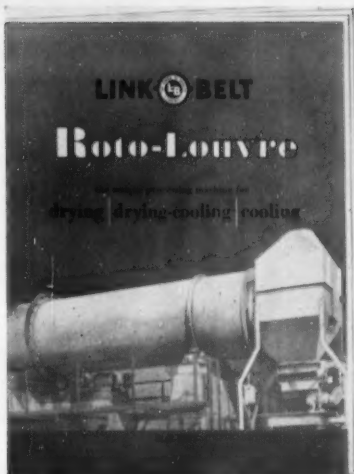


six months of 1954. This increase has been the result of much effort by the fertilizer industry, dealers, experiment stations, and the press. However, no practice will be accepted by farmers and continue to grow unless it is profitable. Midwest farmers are just beginning to appreciate that the elimination of soil fertility as a factor in crop production is the most fundamental step in lowering the cost of production and maintaining farm income during this period of declining prices.

Soil management is rapidly changing from an art to a science. Much of the increased interest in the use of fertilizer materials in a better understanding of crop and soil needs. Less than 10 years ago, after extensive field experiments and farm trials, it was concluded that the direct fertilization of corn was not profitable. Results were erratic in many cases, particularly in dry years when corn yields were reduced by fertilization. We now know that the materials then available did not supply the proper elements or the amount added was only sufficient to give the plants a start, and then starve before maturity. Only after industry supplied the nutrient elements that were needed and depleted soil reserves were restored, were yields regularly and profitably increased.

The application of required nutrients will permit the production of high yields on poor soils in favorable seasons. Through these soil-building programs, much land abandoned because of erosion or excessive nutrient removal has been made more productive than when first cultivated. The wide difference in the initial productiveness of many virgin soils has been almost eliminated in favorable seasons. People on many soils of low fertility need no longer be held down to a standard of living based on nutrient delivery by low-producing fields. They can now enjoy the same advantages as their neighbors who possess better land.

Our past agricultural production in Missouri has been closely associated with the quantity of organic matter in soils. Probably over 95% of the nitrogen and over 50% of



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the phosphorus absorbed by crops on unfertilized soil comes from organic matter. With soils high in humus, and conditions ideal for organic matter breakdown, yields are usually high. But, in excessive dry wet seasons these nutrients are not released and yields are reduced. Crop rotations, including legumes and grasses, have been widely used as a means of restoring soil nitrogen and organic matter. The value of these crops that have been considered soil-conserving has been from the cover they have provided, and a reduction in soil erosion. However, under practical farm conditions, instead of greatly improving soil fertility they have added only limited amounts of nitrogen and masked fertility decline. Legumes add nitrogen and furnish soil cover, but remove more minerals from the soil than do grain crops, particularly when only the grain is removed.

Although interest in adequate fertilization is at the highest pitch in history, there has persisted the dread of losing both crops and fertilizer in unfavorable seasons. In 1951 some areas of the state experienced the heaviest rainfall on record. Where adequate nitrogen was plowed down and minerals had been provided, the corn outgrew grass and weeds. The added nitrogen, substituted for that normally provided by organic matter, nourished the plants and yields were well above average.

The seasons of 1952 and 1953 were extremely dry. The favorable response in these years has dispelled

the fear of losses in dry seasons and promoted the use of soil testing and the application of treatments to provide adequate nutrient reserves. For example, where moisture was too short to produce corn grain, adequate nutrients in many cases have made the difference of whether there is silage and forages for roughage the past winter, or whether a dispersal of herds for lack of feed was necessitated.

In a corn experiment at Columbia in 1952, where only 2½ inches of rain fell from July 3 to August 8, and the average maximum temperature was 91 degrees, adequate fertility made the difference between profit and loss. Where no nitrogen was used the highest corn yield was 54 bushels (only 60% as much as in 1951), and this was obtained with a thin stand. Where the population was increased, yields declined. Where 50 pounds of nitrogen were plowed down the highest yield, 61.6 bushels, was secured with a population of 11,000 plants. With thicker planting, the yields again went down. The addition of 120 pounds of nitrogen gave the highest yield, i.e. 86.2 bushels, at 14,000 plants. But where 250 pounds of nitrogen were used the high yield was 97.1 bushels from a stand of 17,000 plants per acre. Under these conditions of short rainfall the heavier rates of planting decreased yields only where there was a shortage of nitrogen. It might also be concluded that providing plenty of plant food made a limited supply of moisture more effective.

When the surface soil is dry, organic matter does not break down and plants must obtain water from the subsoil which is low in nutrients. Probably much of the benefits from supplemental water results from the stimulation of organic matter breakdown, and the release of nutrients to the plant rather than from the direct effect of water in the plant's growth process. In many cases, the proper application of nutrients can give the same results in grain increases as those from adding water. Where full soil treatment was applied (no irrigation) the corn roots exhausted the moisture to a depth of nearly 4 feet. However, where the

plants were not fertilized the root system did not develop and in August it was possible to make "mudballs" of the soil at a depth of 2 feet, while the plants were wilted. Experiments made at the experiment station at McCredie, by D. D. Smith, showed that with full soil treatment a yield of 79 bushels of corn was produced from 16 acre inches of water. Where nutrients were deficient, a yield of only 18 bushels was harvested, which utilized 14 acre inches of water. This is a bushel of corn from 5600 gallons of water, with full soil treatment. But, on the low nutrient soil, it required 21,000 gallons for each bushel produced. Measurements made on August 17 showed that the top 42 inches of the soil with no treatment contained 4.5 inches of available moisture, but where the full treatment was provided, there was less than one-fourth as much — 1.05 inches. It appears that irrigation is a practice that should be adopted only after plant nutrients have been added in optimum amounts.

There is now much interest in the production of continuous corn. Recent evidence indicates that when properly fertilized and managed, corn may be grown continuously with high yields and less erosion than under systems that have been followed in the past. The corn crop is not erosive, but lack of knowledge regarding soil fertility requirements and other management practices have led to this general belief.

In one experiment at Columbia where corn has been grown continuously for the past 6 years, yield fluctuations have been greatly reduced. With no nitrogen, yields have varied from a high of 79 bushels in 1949 to a low of 23 bushels in 1951—a variation of 56 bushels per acre. However, where 150 pounds of nitrogen were applied with adequate minerals and a population of 16,000 plants provided, yields have varied from 109 bushels in 1950 to 81 bushels in 1952—a variation of only 26 bushels.

In the past, the entire cost of soil treatment has been charged to the crop treatment. With heavier treatments residual effects are striking.



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In experiments where nitrogen at rates of 200 pounds of nitrogen have been applied to corn, the yield of the following wheat crop has been sufficient to pay for the entire nitrogen application with none being charged to the corn. In seasons favorable for the growth of oats, similar residual response have been secured following corn when nutrient reserves have been restored according to soil tests.

Missouri farmers harvest over 12 million acres of crops annually, and pasture about 11 million acres. The increased tonnage of fertilizer has been used in two ways: (1) to rebuild depleted land and correct deficiencies, and (2) as "starters" to give the crop being harvested a quick, vigorous start, and for maintenance of the fertility level.

In Missouri, the first, or the corrective treatment, has been the most important and the key to the soil fertility program, whether measured in terms of crop yields, farm profits, consistency in seasonal response or in volume of fertilizer sales. It is estimated that it will take 1 3/4 million tons of  $P_2O_5$  and 1/2 million tons of  $K_2O$  to correct these deficiencies in Missouri soils. If erosion were controlled it would require from 75,000 to 100,000 tons of  $P_2O_5$  and 50,000 tons to 75,000 tons of  $K_2O$  to replace the amount of these nutrients sold from Missouri farms annually. If all Missouri farmers were to use these nutrients at the same rate as those in our balanced farming program we would need about 275,000 tons of  $P_2O_5$  and 100,-

900 tons of  $K_2O$  annually for the next 10 years.

We are just beginning to appreciate the potential uses of nitrogen when soils are adequately supplied with minerals. Over 4 1/4 million acres of corn could use an average of 60 pounds of nitrogen per acre, or over 125,000 tons annually. An additional 75,000 tons could be used on small grain crops. This total could be doubled if pastures were fertilized. This total of 400,000 tons of nitrogen is a conservative figure if we consider maximum or potential production. Farmers are concerned about excess production when high yields are necessary to pay fixed operating costs, yet being called on to decrease production. A minimum nitrogen need would be 100,000 tons, and could be much higher. Some years ago it was estimated we would use 50,000 tons of nitrogen by 1955. This amount was exceeded in 1953.

Farmers are in a cost-price squeeze. They receive less for what they sell, and must pay as much as ever for what is purchased. Taxes, interest, plowing, planting, seed, cultivation, and other costs are about the same whether corn yields are 30 or 60 bushels per acre. Acreage controls mean less efficient use of machinery. Machinery depreciation is about the same whether 30 or 60 acres are harvested. Thus, the only effective way of maintaining farm profits is through improved efficiency, designed to lower costs per bushel by increasing yields per acre.

The optimum use of fertilizers will continue to be one of the most profitable farm practices. Without adequate plant nutrient additions, it may not be possible for many Missouri farms to produce crops at a profit if prices continue to decline.

Calculations of returns from a 4-year rotation show that profits are increased as proper soil treatments are applied. The fixed costs of production (same regardless of yield) are based on average figures from actual farm cost studies. When corn is calculated at \$1.40 per bushel and other crops in proportion, a net profit of only \$26.55 is shown for the four crops (4 acres—1 acre each crop) for the low level of fertiliza-

tion. At the medium rate, the return is \$45.30, but where treatments are added in adequate amounts, the return from four acres is \$126.65.

Such increases in yield per acre can greatly increase total production. It has been calculated that when corn makes only 35 bushels per acre in Missouri, the cost per bushel is 84 cents. Where the yield is increased to 80 bushels per acre through adequate fertilization the cost drops to 58 cents. An average state yield of 35 bushels per acre on 4 million acres would be 140 million bushels. If corn is worth \$1.40 per bushel then the profit would be \$78,400,000. However, if the acreage were reduced to 1½ million acres and the yield increased to 80 bushels per acre, production would be only 120,000,000 bushels. However, with a production cost of 58¢ per bushel the net profit for the state would be \$98,400,000.

Similar reduction can be made with other crops. Although there are problems of management of these diverted acres, it is possible to reduce production and increase profits through the proper use of greater quantities of plant foods.

Findings on methods of restoration of soils of low fertility or those seriously depleted may rank among the most significant in agricultural research. The availability of fertilizer materials that will give a consistent profitable response is causing as much change in the corn and wheat belts as did hybrid corn or the combine. The use of fertilizer has increased because it is profitable. Improvements have been made in soil testing procedures as a means of determining nutrient needs. Although much refinement is still needed in testing procedures and interpretation, they are the best "tool" available for determining needed nutrients for crop growth. Proper nutrient addition can increase farm efficiency in these times of declining prices. Increased yields will contribute to surpluses. However, it is possible through acreage reduction and proper fertilizer usage to reduce total production, yet maintain or increase farm income.

The continued growth of the fer-



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tilizer industry is dependent on supplying farmers with those materials that are needed by individual fields and will regularly return a profit.

Fertilizer manufacture and sales should be designed to give the farmer what he needs—not what the manufacturer may want to sell. Improper service and information have retarded the use of plant foods.

Many of our soils are becoming so depleted that the amount of plant food material required for building up the soil is far beyond past estimates. It will require substantial expenditures and credit. Farmers will adopt these practices because they are basic and profitable. It is encouraging that our credit agencies share this viewpoint and consider credit for proper plant nutrients a wise investment.

### Granulation

Moderator of the panel was NFA's chemical engineer, Edwin C. Kapusta, who steered the discussions and questions after introducing the panelists.

**John O. Hardesty, Senior Chemist  
Agricultural Research Service  
U. S. Department of Agriculture**

In the first quarter of the century there seems to have been no general conditioning problem with respect to mixed fertilizers, probably because of the large quantities of the natural organic materials which they contained. By the early thirties the supplies of natural organics for fertilizer use had been greatly diminished by their diversion to animal feeds where they commanded a higher price. Chemical nitrogen products had replaced organics in many mixed fertilizers to such an extent as to create a

general conditioning problem. Consequently, about 1930 the Department's research on granulation was extended to the processing of superphosphate and mixed fertilizers containing superphosphate. Of the methods then available such as spraying, shredding or extruding, tableting, graining, and agglomeration in a rotary cylinder, the latter method seemed to offer the greatest promise. The advantages of granulating moistened mixtures by agglomeration in a rotating cylinder were set forth by Ross in 1930 and 1931.

At the annual meeting of the Association of Official Agricultural Chemists in Washington, D. C., in November 1931, Ross made the following prediction concerning granulation of fertilizers, "The process is an economical one and is likely to come into still more extensive use by reason of a new development in fertilizer manufacture known as the ammoniation of superphosphates. In the manufacture of ordinary superphosphate it is very important that the finished product should not contain any considerable excess of moisture or free acid. If the product is to be ammoniated, that is treated with free ammonia, any free acid present is neutralized by the ammonia and a considerable excess of acid may be used in the manufacture of the superphosphate in order to shorten the time of curing. The heat developed by the neutralization of the free acid in the material is sufficient to drive off excess moisture present. The granulation of such a product will then consist simply in passing the hot material through a rotary kiln counter-currently to a stream of air at ordinary temperatures."

Subsequent measurements of the heat developed in the ammoniation of superphosphates showed that many highly-ammoniated, high-analysis mixtures could be granulated and dried with the use of the heat of ammoniation. Further investigations indicated (a) the advantages of carrying out the agglomeration step in a non-drying atmosphere, (b) the high susceptibility of fresh den superphosphate



to agglomeration, (c) the inhibiting effect of organic matter on the agglomeration of mixtures, (d) the effects of highly soluble salts such as ammonium nitrate and urea in promoting agglomeration by increasing the volume of liquid phase per unit volume of water present and (e) the desirability of maintaining an agglomeration temperature sufficiently high to solubilize these salts.

Investigations of nutrient distribution in granulated mixtures have shown that variation in the composition of granules of different sizes is much greater in the case of mixtures that contain coarse particles previous to granulation. However, the examination of 29 commercially granulated mixtures produced in 1953 showed fairly uniform distribution of plant nutrients among granules of different size.

Granule-hardness tests have indicated that most granulated mixtures will withstand the handling and support the loads to which they are normally subjected during shipping and storage.

Work with finely-divided coating agents for improving the physical condition of granular ammonium nitrate and high-analysis mixtures has indicated the beneficial effects of such materials as diatomaceous earth, clays, and phosphate rock dust. Such coating agents act to separate the granules and thus reduce caking but do not prevent moisture absorption by hygroscopic materials. Moisture permeability tests on different types of bags in conjunction with bag-storage tests have shown the importance of packaging such materials in high-grade, moisture-resistant bags.

Substantial quantities of granular and powdered mixtures of identical formulation have been prepared for comparative field tests in different parts of the country, on such crops as corn, cotton, tobacco, and potatoes. In general, the results of these tests conducted by various state experiment stations indicated that the difference in particle size of the two types of mixtures had

little or no effect on the growth of the crop. More recent work in the laboratory and greenhouse indicates that some soluble salts in intimate contact with other fertilizer constituents, as within the granule of a mixed fertilizer, have a solubilizing effect on at least some of the water-soluble phosphates present. Further research is needed to provide adequate information concerning these solubility effects, methods of placement, soil and crop characteristics, and climate in relation to optimum particle size of various types of fertilizers.

The current work being conducted in cooperation with the Tennessee Valley Authority involves chiefly studies of high-nitrogen mixtures, especially those having 1:1:1 nutrient ratios in grades as high as 15-15-15, in which the nitrogen is supplied mostly or entirely in the form of free ammonia and ammonium nitrate or urea. The studies include the determination of the effects of temperature and formulation on the moisture required for agglomeration, methods of controlling the temperature and moisture content during processing, and the storage and drilling characteristics of the high-nitrogen products being made.

Small-scale equipment for continuous granulation of mixtures has been installed in conjunction with equipment for recording the temperature of the material and for the rapid determination of free moisture at various stages of processing. This equipment operates on 100 to 200 lbs. of material per hour and is useful in obtaining basic data for pilot- and plant-scale operations requiring larger quantities of raw materials.

Under laboratory conditions the moisture content required for agglomeration of a 10-10-10 fertilizer formulated with 474 lbs. of ammonium nitrate per ton decreases from 9% for an agglomeration temperature range of 138° to 142° F. to 5% for the range 204° to 208° F. Corresponding values for a 15-15-15 mixture formulated with 785 lbs. of ammonium nitrate are 6% moisture for agglomeration at about 100° F. and 2% at 150° F. The moisture

content required for agglomeration at 192-196° F. of a 10-10-10 fertilizer containing 7.6 units of nitrogen from ammonium sulfate was 15%, but decreased to 3% when the ammonium sulfate was replaced by ammonium nitrate. It is planned to extend these studies to other nutrient ratios.

Bag-storage and drillability tests on these materials under constant conditions of temperature and relative humidity are conducted in cooperation with the Agricultural Engineering Research Branch of the Department. At 65% relative humidity and 86° F. for example, the drillability of the granular 15-15-15 fertilizer remained satisfactory after storage for at least 7 weeks in high-grade, moisture-resistant bags.

Throughout the course of this work close contact and active cooperation has been maintained with industry associations, companies and individuals, as well as Federal, State, and private agencies interested in developments connected with the processing of fertilizers. Such cooperation contributes to advances in fertilizer technology and to the progress of the fertilizer industry in supplying the American farmer with products of improved physical condition.

In the United States, the commercial production of granular superphosphate and granular base mixtures, by means of agglomeration in a rotary cylinder and subsequent drying of the products, has been practiced by the Davison Chemical Corporation since about 1936. During and immediately following World War II, manufacturers necessarily placed emphasis on the quantity of fertilizer produced and there was little development of methods for producing granulated mixed fertilizers. One of the first plants to incorporate ammoniation techniques with granulation directly to grade by an agglomeration process was placed in operation early in 1950 at Des Moines, Iowa, by the Iowa Plant Food Manufacturing Company. During the past 4 years more than 50 mixing plants have installed granulation equipment using solids-agglomeration or slurry-



dispersion processes. Most of these plants are taking advantage of high ammoniation, often in conjunction with the use of excess acid, to introduce large amounts of nitrogen into the mixture and to obtain a high temperature during agglomeration. Many high-nitrogen grades contain large amounts of ammonium nitrate. This soluble salt increases the volume of liquid phase per unit volume of water in the mixture. Under these conditions granulation occurs at low moisture content but the procedure requires rigid control. Much more research is needed to supply information for use in applying control measures to the processing of a wide variety of mixtures.

L. D. Yates

**Division of Chemical Development  
Tennessee Valley Authority**

(Editor's note: Due to extensive use of film slide projections outlining the TVA continuous ammoniation and granulation process described in our October, 1953 and subsequent issues, we will not attempt to treat Mr. Yates' talk fully. However, the subject matter is of such importance and interest to the industry that we will try to highlight a few of the facts presented by the speaker in this panel.)

As the TVA pilot plant is operated at present, it is not utilizing a dryer as this additional step has been found unnecessary in the set-up as it is utilized now. Experiments have been conducted under controlled conditions in the liquid phase of the plant to determine the comparative results when separately using hot water, cold water and steam to promote agglomeration. The results of these trials have been tabulated graphically, and were presented to the meeting. The temperature factor of each process has been related to the method of agglomeration and the residual moisture content of the mass. In general, the use of cold water has tended to raise the necessary moisture content to a ratio of 10%, while hot water has averaged a ration of 9%; steam, however, has established a ratio of only 4½%. In the experiments with steam, 80 to 150 lbs. of steam per ton has been introduced into the rolling bed of the ammoniator, thus taking advantage of both the condensation and the temperature rise to increase the liquid phase of the process.

After the granulation phase of the process, the off-size particles are screened out and re-cycled into the initial phase of the process. The amount of the final product screened out for re-cycling has averaged 15 to 18% through the experiments. In reply to a question about possible over-ammoniation of these fine particles as they are re-introduced into

the ammoniator, Mr. Yates stated that there had been no evidence of an off-analysis product as a result of this practice; he explained that the fine particles had apparently reached a state of near-saturation of ammonia as they made their initial trip through the ammoniator, and therefore absorbed little on the re-cycling.

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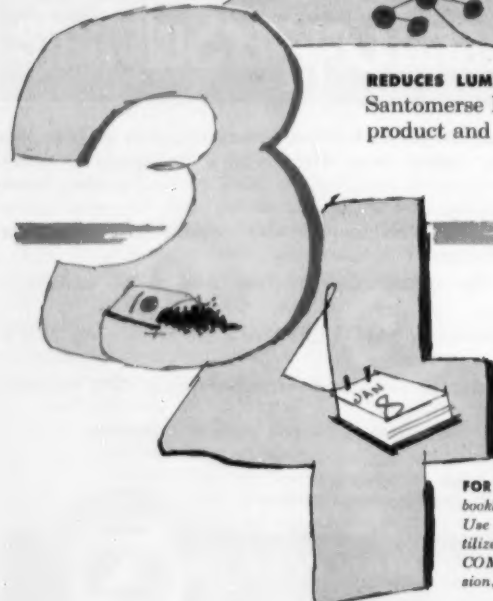
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Proceeding to the TVA tests on storage, he described a laboratory test which has been developed to cake and break mixed goods and estimate their comparative caking qualities. However, he emphasized, the final determination of these qualities is reserved for the results of actual bag storage tests. He outlined results of 9-month bag storage tests of granular versus non-granular mixes; the granular goods, he pointed out, proved to be in good condition at the end of the period, while the non-granular mixes were in poor condition. In further experiments with high-analysis mixes, Mr. Yates described the condition of goods dried down to 3% moisture content as caked after three months, while the same mix dried down to 2% was non-caked after nine months storage.

Responding to another question from the floor about success of granulation of no-nitrogen grades, he indicated that mixes of this sort require so much water in the agglomeration stage (13 to 16%) that drying becomes a problem; however, he concluded, no-nitrogen mixes do not need to be dried as low as grades containing all three of the primary elements.

**Robert J. Engelhardt,**  
**Project Engineer**  
**John J. Harte Co.**

In the years since the end of World War II, the demand for granulated fertilizers has been snowballing, and today is so insistent that there are practically no manufacturers of fertilizers who are not giving some serious thought to the production of a granular product. During this same period and growing at an equally prodigious rate has been the number of new granulation processes. To the manufacturer contemplating the conversion of his facilities to granulation, this latter situation can be a source of much confusion.

Most of the systems employed for granulating fertilizers can be considered to fall under one of three general classifications. First, and probably the most widely employed are those in which water or a substance containing water is added to

the mix to promote agglomeration of the powdered materials present and then removing the water after the granules have been formed, by supplying external heat. Second, come those systems in which the moisture which has been added to promote agglomeration is driven off by means of heat supplied by some chemical reaction that is taking place in the mixer. Third, are those in which the ammoniation reaction and frequently the acidulation of rock take place in a slurry state. Following is a comparison of certain characteristics of the granulation systems falling into each of these classifications.

The principal virtue of the wet-dry system is its flexibility. In this system the dry ingredients and liquids are blended batchwise or continuously in conventional equipment. The additional liquid necessary for granulation is added in the primary mixer or in many instances in separate mixing facilities. After passing through a dryer and cooler the material may go directly to storage or can be classified and the fines recycled. With a properly designed granulation unit of this type a product that will meet practically any specifications as to particle size range can be made. Since, practically all materials that contain readily available forms of plant food are wettable, there are practically no restrictions on formulation when this method of granulation is employed. The amount of fine material recycled, if any, is dependent on limitations imposed on particle size distribution in the product. Manufacturing costs will, of course, be higher than that of non-granular materials due to the additional cost entailed in the drying operation. Drying costs run between 50 to 75 cents per ton for material where no recycle is employed. If recycle is employed, the drying costs will increase in almost direct proportion to the recycle ratio. The conversion of a conventional dry mixing unit to granulation by this system is relatively simple, since most of the existing equipment can usually be tied into the system without being moved. The additional equipment

required can be added to the mixing facilities to form an inter-locked system or can be installed so as to operate independently of the mixing unit. Where the independent method of operation is used, a small dryer operating on a multiple shift basis can handle the output of a large batching unit operating on a single shift basis. Any advantages to be realized from this procedure must, of course, be counterbalanced against the necessity of tying up additional storage space and the additional expense entailed in re-handling.

When heat of reaction is employed to reduce the moisture content of the granular material some of the flexibility inherent in the previously discussed classification is lost. This loss of flexibility is not very serious since only a few grades are affected and these usually will represent a very minor portion of the average plant output. Fines are not normally recycled in a system of this type, therefore, the product consists of a mixture of granules of various sizes plus a small amount of fines. Since no dryer is used, manufacturing costs are only slightly higher than that of ungranulated material of the same grade. This slight additional cost is usually more than offset by a lower cost of raw materials due to the utilization of low cost sources of nitrogen. The conversion of a conventional plant to this type of granulation system requires only the addition of cooling facilities and some minor modifications of the existing unit. The cost of this conversion would be only about 40% of the cost of converting to a wet-dry type of unit. An outstanding example of the adaptation of this principle to granulation is the process developed and used by the Davison Chemical Corporation. This process which is available for licensing has been in operation for several years in a number of different plants. The product is highly uniform and has excellent mechanical properties. This is an added advantage to the prospective user of this process since most of the operating diffi-

culties encountered in any new process have already been overcome and a great deal of research work has been done in developing this process.

The chief advantage of employing one of the slurry processes is that low cost raw materials can be utilized. Typical of the slurry processes are the various nitrophosphate processes which have been in operation in Europe for a number of years and are now beginning to appear in this country. The nitrophosphate processes have the additional advantages of using less sulfuric acid per unit of available  $P_2O_5$ , and in some of these processes the necessity for grinding phosphate rock is eliminated. The various nitrophosphate processes differ chiefly in the method employed to eliminate calcium nitrate, which is very hygroscopic from the product, which normally consists of almost uniformly sized particles. Most slurry processes require the recycling of a rather large amount of material. In general, formulations are more restricted than in the previously described processes. However, some high analyses grades can be produced by these processes which would be economically unattractive by the other granulation methods. Operating costs are somewhat higher than for non-granular grades, but raw material costs are sufficiently low to more than offset this. The conversion of a conventional dry mix plant to one of these processes presents a considerably more complex problem than conversion to one of the other granulation systems. It is estimated that the cost of converting an existing plant to a system of this type would cost approximately two to four times the cost of converting to a wet-dry type of system. While specific references have been made to the nitrophosphate processes most of the points mentioned will apply to other slurry processes as well.

To review briefly: first, the granulation process that requires the least amount of capital expenditure for conversion of existing facilities is The Davison Granulation Process. This system also shows the lowest

operating cost figures. This system possessing the greatest amount of flexibility is the wet-dry system. The systems producing the lowest cost product are the slurry systems. These systems usually show the highest operating costs and also require the largest amount of capital expenditure for the conversion of existing facilities. While only a few of the salient features of each of the various classes of granulation systems have been mentioned here it can readily be seen that the choice of the proper granulation system can only be based on careful evaluation of all the economic factors involved. The selection depends on all of the following considerations: consumer demands, which vary widely in different areas of the country; whether the installation is a new facility or the conversion of an existing plant; the amount of capital available for the project; raw material and fuel costs and availability. It is unlikely that any one method of granulation would be best for all of the possible combinations of conditions that can exist.

**W. W. Coffin  
Link-Belt Company**

The granulation of fertilizer has taken this industry by storm. In all sections of the United States and Canada, new plants are being installed. These plants vary from very simple designs to quite elaborate installations. All of them have the same basic purpose—to produce free-flowing fertilizer that will stay in condition in the bag and handle well in the field.

Unfortunately, up to now all of these processes have one or more of the following limitations: 1. Production costs are greatly increased through the necessity of adding water to the ammoniated mass to obtain granulation and then heat drying the product. These costs run as high as \$1.50 per ton above conventional dry mix costs. 2. The control of particle size. If fines are left in the product, more surfaces are available for cementing of particles. Oversize particles are not desirable

in the product. If screening of the final product is practiced, it then becomes a crushing and recycle problem. 3. The final product is not homogeneous. This presents the problem of controlling analysis when reclaiming from the storage bin due to segregation of particles in the pile. 4. Ratios requiring high concentration of nitrogen must be formulated with large quantities of solid forms of nitrogen to prevent the mudding of the mixture in the equipment and excessive reversion of citrate soluble  $P_2O_5$ . 5. Some storage curing is usually necessary. This makes blasting in the bins a requirement which in turn causes degradation of product.

That was the situation only a year ago. But, Mr. S. J. Martenet, president of E. Rauh & Sons Fertilizer Company, Indianapolis, Indiana, had an idea that fertilizer could be made, using only high grade anhydrous ammonia and ammonium nitrate solutions as a source of nitrogen in order to reduce the cost of raw materials. Further, he felt that this mixture could be processed to produce a finished product that would be non-hygroscopic with high nitrogen ratios having a high degree of plant food concentration. Mr. Martenet, the E. Rauh & Sons Fertilizer Company and Link-Belt Company entered into a cooperative pilot plant project to study the value of Mr. Martenet's idea and to develop a workable process. The result of this work is the Link-Belt-Martenet Process now offered to the entire industry.

Ammonium nitrate solution, water and ammonia are brought together in what we refer to as "the liquid phase." A solid phase consisting of superphosphate, triple superphosphate, potash salt and such other salt as trace elements, etc., is screened through a 10-mesh vibrating screen. The oversize is crushed and then rescreened.

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slurry mixer; this mixer being a twin shaft paddle mixer. The liquid phase is fed continuously into the mixer through a Rotameter and ratio controlled system, interlocked with the dry mix feeder.

A slurry is formed by distributing the liquid phase under the surface of the solid phase as it enters the front end of the slurry mixer. This slurry contains from 10% to 16.5% moisture, depending upon the analysis of the formula, and is thoroughly mixed. The temperature of the mass rises to between 165 and 200 degrees F. during its passage through the slurry mixer. This slurry must be maintained to produce the desired chemical reaction and to insure homogeneity of the mass.

From this slurry mixer the material drops into a conditioning mixer. This conditioning mixer is also a twin shaft paddle mixer similar in design to the slurry mixer. Here the materials receive a crushed undried recycle material which has passed through the granulator and has been rejected as oversize immediately ahead of the dryer. The mass is converted while traveling the length of the conditioning mixer, to soft granules ranging in size from  $\frac{1}{2}$ " diameter to very small pellets. During this conditioning process the temperature of the mass is reduced and the moisture content is lowered as a result of evaporative cooling. As material is discharged from the conditioning mixer it is relatively free-flowing and has no tendency for the particles to stick together. It also handles well in chutes. From the conditioning mixers the material passes into the Roto-Nodulizer.

As the particles travel through the Roto-Nodulizer, they are reduced in size and edges of the particles are rounded and the moisture is reduced from 6% to 13% depend-

ing on the grade that is being formulated. These granules are discharged from the Roto-Nodulizer to a vibrating screen where the oversize is separated from the one-size particles. The oversize particles are recycled to a two-roll crusher to the conditioning mixer and by means of a positive feed control system the recycle load is held uniform.

In the Link-Belt Roto-Louvre Dryer-Cooler which receives the granular particles from the vibrating sizing screen, the hot drying gases and cooling air pass through channels under the bed of material and up to the revolving load of granules, discharging through a dust collecting system. The inlet air temperature of the drying process is closely controlled to prevent softening of the pellets which in turn causes sticking and subsequent decomposition. The moisture is reduced to below 2%, the product is then cooled and then discharged at approximately 100 degrees F. to prevent reversion of the pentoxide in bulk storage, or to prevent deterioration in bags when bagged direct from the dryer-cooler.

The following ratios have been produced in various concentrations of plant foods: 2-1-1, 1-1-1, 1-2-1, 1-2-2, 1-2-4, 1-3-9, 1-4-0, 1-4-2, 1-4-4.

All ratios have satisfactory physical properties for bulk or bag storage and handle well in drills when being applied to the soil. Hygroscopicity of the product is very low, which can be explained by X-ray defraction patterns which were made by Mr. Henry Terford under the direction of Dr. George L. Clark at the University of Illinois. These patterns show the reaction of ammonium nitrate with potassium chloride so nearly complete that there is insufficient ammonium nitrate for identification by X-ray.

X-ray defraction of a 12-12-12 fer-

tilizer shows that all the nitrogen is present in the following combinations: Ammonium Chloride, Ammonium Sulphate, Potassium Nitrate, Mono-Ammonium Phosphate, Diammonium Phosphate and Potassium Ammonium Phosphate with very slight evidence of Ammonium Nitrate. The phosphates are present as ammonium phosphate, tri-calcium phosphate and potassium ammonium phosphate. Potash is present as potassium nitrate and potassium ammonium phosphate with slight evidence of potassium chloride.

This basic exchange is accomplished by the nearly homogeneous distribution of the ammonium nitrate in the product which results from mixing it intimately while in solution with the finely divided dry materials and subsequent crystallization from solutions throughout the mass. Savings in raw materials costs over conventional fertilizers range from \$3.80 per ton for 4-16-16 to \$12.05 per ton for 12-12-12. The lower material costs are due to the use of ammonium nitrate solutions and anhydrous ammonia which are less expensive than solid forms of nitrogen, and a larger proportion of normal superphosphate to the more expensive concentrate form of pentoxide.

Summarizing, the Martenet process has the following advantages: 1. It produces all ratios of fertilizers in a very high degree of plant food concentration. 2. Its process allows a wide range of particle sizing. 3. The finished product is a granular homogeneous freeflowing fertilizer that can be stored indefinitely in bulk or in bags without fear of cementing together, even when stored in silos a hundred or more feet high or in bags stored twenty feet high. This assures perfect drilling conditions in the field.



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4. Large savings are made in the cost of nitrogen by the use of liquid forms such as anhydrous ammonia and ammonium nitrate solutions as the sole source. 5. Large savings are made in the cost of pentoxide because the high concentration of ammonia and ammonium nitrate permits a larger proportion of pentoxide to be derived from the lower cost of normal superphosphate. 6. No period of curing is necessary, allowing greater turnover of storage and savings of storage facilities and costs. 7. Your present plant can be converted to this process for a reasonable cost.

#### Bulletin On Yale Truck

Yale's new Safety Silhouette Electric Fork Truck is described in detail and the outstanding features illustrated in a new four-page, two-color booklet (Bulletin 5001) available from the Yale Materials Handling Division. The Yale & Towne Manufacturing Company, Philadelphia.

#### Richardson Scale New Offices

Richardson Scale Co., Clifton, N. J., manufacturer of industrial weighing and materials handling equipment, announces the moving of its Atlanta branch office to 423 Grant Building. E. C. Mott will continue as branch manager.

They have also announced the opening of new branch office in Memphis, Tenn., and the appointment of Gus Baurndind as branch manager. The new office will be located at 211-1/2 Court Avenue.

Territory assigned to the Memphis office will include Arkansas, Mississippi, Louisiana and parts of Western Tennessee. This territory was formerly covered out of the Company's Atlanta office.

#### New Data Book On Continental Screw Conveyors

The industrial division of Continental Gin Company of Birmingham,

Alabama, announces a new Screw Conveyor Catalog and Engineering Data Book number ID-541. Included are various sizes and types of conveyors fully illustrated with photographs, line drawings, dimensions and engineering data.

Write Continental Gin Company, Industrial Division, Box 2614-H, Birmingham 2, Alabama, for this comprehensive book.

#### CFA Plans 2nd Edition of Western Handbook

The first edition of 15,000 copies of the WESTERN FERTILIZER HANDBOOK, which was published only last September, is completely sold out. Prepaid orders are still coming in from all over the civilized world, mostly from the United States, Canada, and Latin America. CFA, gratified at this splendid public acceptance is now laying plans to have the second edition published.



#### REPRESENTATIVE ANALYSIS

Calcium content —CaCO <sub>3</sub> value	52.47%
Magnesium content —CaCO <sub>3</sub> value	44.23%
Calcium Carbonate —Equivalence	96.70%

## MAGNESIUM LIMESTONE

EACH TON OF MASCOT LIMESTONE  
CONTAINS ABOUT

3.6 Lbs. Zinc	.75 Lbs. Manganese
4.8 Lbs. Sulphur	.05 Lbs. Copper

**American Limestone Co.**

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## Get **FUR-AG**,\*

*the Sterilized Organic Conditioner*

Fur-Ag reduces bag-set, promotes drillability, speeds up curing in the pile, and provides bulk. It is sterilized—free from plant diseases, insects, weed-seeds—and is dark in color. Fur-Ag is an inexpensive organic conditioner that is produced in volume the year around and shipped in bulk or bag. Proved thru use by leading fertilizer manufacturers. Write for complete information—Bulletin 127.



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CHEMICALS DEPARTMENT

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SAVE — SAVE — SAVE  
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YOUR CHOICE ONLY **\$850** EACH  
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Payloaders have 10 cubic feet bucket capacity. Dump trucks that will mean big savings—at this price, better order soon!

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(95% Nitrate of Potash)

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Special Mixtures and Soluble Fertilizers

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Ground Cotton Bur Ash, 38/42% K<sub>2</sub>O Potash.

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Urea, 45½% and 46% Nitrogen

Calcium Ammonium Nitrate, 20.5% Nitrogen

Representatives

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Bags—Paper and Textile

Ammoniated Base and Superphosphate

Dolomitic Lime

(42-44% Magnesium Carbonate)

### POTASH

PEOPLES OFFICE BUILDING

Charleston

South Carolina

Phones: 3-4828 and 3-4829

## ARKANSAS

**Arkansas Farmers Plant Food Company**, Little Rock, has notified **Arkansas Farmers Association** that its exclusive fertilizer sales contract will not be renewed July 15. This contract has been in effect since the fertilizer plant was built in 1949. The Plant Food Company will set up its own distribution system, headed by **Lloyd A. Dhonau**, long-time member of the state Extension Service. Friction has been evident between the two organizations for some time, as has been reported here, despite interlocking directorates.

The Arkansas plant is about to make a \$10,000 addition to its present office building.

\* \* \*

**Lion Oil**, which has been shipping since late May from its Barton plant, has it up to 300 daily tons of anhydrous ammonia. When all facilities come on the line it is expected to average 600 daily tons of anhydrous and pelleted ammonium nitrate.

## CALIFORNIA

**Brea Chemicals**, Brea, is shipping now from its \$13,000,000 plant, which was completed in March and put through its shakedown runs until early last month.

\* \* \*

**Shell Oil**, which has a new platforming plant at Martinez has built a pipeline from that plant to their nearby ammonia plant at Pittsburgh to convey by-product hydrogen which will partially replace the natural gas hydrogen they have been using.

\* \* \*

**Plant Food Corporation**, Los Angeles, have bought the facilities of **Pomona Fertilizer**, Pomona, and will operate it as a branch, under the management of **Keith Annis** who has been with them for several years. Former Pomona manager **Edward Struve** will continue in an advisory capacity.

\* \* \*

**Midvalley Chemical Company**, Corcoran, formerly **H&W Chemi-**

**cals, Inc.**, is now owned by **Phillip Hansen**, **J. R. "Dick" Short**, **Bill Halley** and **W. K. Wallace**.

## COLORADO

**Peat Corporation of America**, Denver, has been formed by the merger of **Left Hand Peat Co.**; Boulder, with **Timberline Peat Co.**, Denver. Officers of the new corporation are **Wallace Ray**, president; **W. F. Harms**, vice-president and **Rex Scott**, secretary. The former Timberline Company was owned by **Robert Hendricks**.

\* \* \*

**VitaSoil Company**, Colorado Springs, of which **Gerald O'Connor** is president, have announced the establishment of a national distribution system for their soil conditioners, plant food formulae, including the new **FeSul**, a soluble soil amendment and root zone conditioner.

## FLORIDA

**American Agricultural Chemical**, Pierce, has received its second award for good forest management in a 1440 acre tract in Hillsborough County. Manager **F. R. Bergquist** accepted the certificate presented by County Agent **Alec White**. The award-winning program consisted of reforestation on phosphate spoils banks where several million seedlings have been planted, and subsequent selective cutting to weed out the stunted trees. AAC has 27,000 forest acres, and a full time forest management program has been under way since 1938 with a full time supervisor—**Maynard C. Leetun**—in charge.

## ILLINOIS

**Illinois Farm Supply**, Tuscola, has contracted with **Blaw-Knox** as general contractor. As we reported in May, the plant is scheduled to turn out 50,000 annual tons of high analysis mixed fertilizer for the **Gro-Flo** brand. Ground breaking is expected about July 1.

\* \* \*

**Vermilion Nitrogen Corp.**, Fairmount, recently formed is delivering from two 30,000 gallon anhy-

drous ammonia tanks. **Paul Jolley**, president; **Phillip Miller**, secretary and **Laverne Smooth** are the officers.

\* \* \*

**Steve Turner Farm Seeds**, Pontiac, is building a mixing plant which should be completed about August 1. **Dr. Jerome C. Lyons** is associated with the concern as full-time agronomist.

## IOWA

**Farmers Coop Oil Association**, Orange City are planning to build a \$25,000 fertilizer plant.

\* \* \*

**Iowa Plant Food Co.**, Des Moines, has run into neighbor trouble. A group of citizens has asked them to suspend operations until dust and fumes can be eliminated, and has complained to Council about it. Seems similar complaints were raised last year, and the City health department has had "considerable negotiations" with the company on the subject.

\* \* \*

**Allied Bottled Gas**, Fort Dodge, is distributing mixed liquid fertilizer — 6-18-6 and 3-12-9 — in addition to their anhydrous ammonia business. They have branch plants at Gilmore City, Pocahontas, Burdette, Ellsworth and Humboldt.

\* \* \*

**Radco Fertilizer**, Essex, is opening a branch anhydrous ammonia plant at Creston.

\* \* \*

**GoodLand Agricultural Chemical**, West Union, is delivering from its \$30,000 establishment for the distribution of anhydrous ammonia.

## KANSAS

**Cooperative Farm Chemicals Association**, Lawrence, has named **R. R. Zurbuchen** as manager and **J. M. Wadsworth** as superintendent of the new plant which is due to go into production this month and to be formally dedicated August 31.

## KENTUCKY

**Spencer Chemical** will spend \$1,750,000 to add nitric acid facili-





## Around the Map

ties and a Spensol plant to their Henderson Works, in Henderson. This will supply the third Spensol shipping point, the facilities for which are to be transferred from Charlestown, Indiana. The nitric facilities are entirely new. No expansion of Henderson's anhydrous ammonia facilities are planned at this time, the company tells us.

**Commonwealth Fertilizer**, Russellville, is well on the way with its \$85,000 plant expansion, which includes processing of 20 hourly tons of superphosphate, according to company president, **Joe Hicks**. The new unit should be in production by the end of this month.

**North American Fertilizer** had what was literally a tough break the other day when a 13,000 gallon tank of sulphuric burst and filled the neighborhood with the odor as of rotten eggs. No one was injured.

### LOUISIANA

**St. Regis Paper** has announced that the New Orleans office of its multiwall packaging division is now at 307 Carondelet Building, New Orleans 12. **Herman Haberle** continues in charge.

### MISSISSIPPI

**Spencer Chemical** are erecting a Hortonsphere at Vicksburg which will add 650,000 gallons to their anhydrous ammonia storage capacity.

**Mississippi Road Supply Company, Jackson**, has been appointed by the **Frank G. Hough Co.** to handle the Payloader account for the entire state.

### MISSOURI

**Mississippi River Fuel Corporation** has awarded the prime contract to **The Fluor Corporation**, Los Angeles, to trigger the construction of their new \$15,000,000 ammonia plant near Crystal City, on a 4700-acre site. President **William G. Marbury** expects his company's plant to be in production by early 1956, turning out anhydrous ammonia, ammonium nitrate and ammonium solutions. Initial capacity is set up for 140,000 annual tons. Mr. Marbury, commenting on their recent acquisition of Natural Gas & Oil Corporation of Shreveport, La., said "Our entry into the chemical field is not necessarily related to the recent acquisition. Both however do add diversification and, at the same time, are integrally related to our natural gas transmission business."

**Monsanto** has been awarded, for its development of Krilium, one of the highest honors at the disposal of the **Men's Garden Clubs of America**. Their clear cut method of presenting Krilium "without the flood of exaggerated claims" was praised during the presentation.

**Chase Bag Company** is adding over \$400,000 of multiwall bag making and printing equipment to its Minneapolis branch, according to their president, **F. H. Ludington**. Manager of the Minneapolis branch is **John R. Hale**.

### NEBRASKA

**Nitrogen Division's Omaha plant**—to cost around \$25,000,000 by the time present construction is completed "we like to think of as only

a beginning" said **Hugo Riemer** Nitrogen Division president at a celebration marking the completion of the ammonia production facilities. The urea phase of the plant is still in construction but completion is expected soon. **Catalytic Construction** and **The Girdler Company** are the two principal contractors.

**Nebraska Fertilizer Company's** fire did an estimated \$30,000 damage to the plant in Omaha, but a great deal of this was in stored feeds, according to co-owners **Carl M. Michael** and **C. H. Smith**.

### NORTH CAROLINA

**Baugh Fertilizer**, New Bern, suffered a \$35,000 fire loss in a conflagration that swept through a number of waterfront buildings on June 10.

### NORTH DAKOTA

**Summers Fertilizer Co.**, Baltimore, Md., are quoted by **Minot newspapers** as about to make a decision concerning the plant they have considered building there. **J. E. Totman** told the local press that no final decision could be announced until the final survey had been concluded. Preliminary surveys have been under way for the past two years.

### OKLAHOMA

**Dowell-Tyler Fertilizer Company** is the new name of the former **Dowell Fertilizer Company** at Stillwater. **Jack Tyler**, new firm member, has been connected with **Phillips Petroleum**.

### PENNSYLVANIA

**Atlas Equipment Company** is the new distributor of Payloaders in the Pittsburgh-Altoona-Johnstown area, with Pittsburgh as headquarters, according to announcement by **The Frank G. Hough Co.**

### SOUTH DAKOTA

**Yankton Fertilizer Co.**, Yankton, which was incorporated with \$60,000 capital stock, will distribute anhydrous ammonia. **Clyde A. Hicks**, Yankton County soil conservationist

# LOOK!

## This is what MINCO will do for you:

25 pounds to the ton used in conventional fertilizers will produce a stock pile which will be cooler and softer. After crushing and bagging, there will be no caking because MINCO prohibits the taking on of moisture and acts as a coating and parting agent.

To make granules, mix 25 pounds of MINCO in each ton of dry mix, allowing the mixer to turn a few revolutions before adding solutions. Granules will form perfectly in rotary drum while drying and cooling. Use 25 pounds of MINCO to the ton of fertilizer while bagging as a coating and parting agent. MINCO is being used by many fertilizer companies and has proven itself an exceptional conditioner and pelletizer.

Centrally located.

Sample upon request.

*Manufactured by*

## MINCO PRODUCTS CORPORATION

P. O. BOX 367  
Saginaw, Michigan

has terminated 24 years with USDA to become general manager.

### UTAH

Utah Chemical Co., has ODM approval to build a \$19,000,000 plant at Mt. Pleasant in Sanpete Valley, according to N. G. Morgan Jr., president. Anhydrous ammonia, nitric acid, ammonium nitrate and possibly urea are in the plans. Natural gas from the Clear Creek field would be used.

### WASHINGTON

Columbia River Chemicals, Inc. have awarded contract to The Fluor Corporation, Los Angeles, to design and construct a \$12,000,000 plant in the Attalia Industrial Site, between Pasco and Walla Walla. The project is planned to produce 160 daily tons of anhydrous ammonia; 110 daily tons of urea; 140 daily tons of ammonium sulphate, mostly for agricultural purposes.

The synthetic ammonia plant will

be designed to generate hydrogen from bunker "C" fuel oil for combination with nitrogen from the air to produce anhydrous ammonia. Bunker "C" fuel oil will be shipped by barge lines on the Columbia River. The plant will also be designed to use natural gas as raw material at such time as it is available in the area. The urea plant will be the first in the West, and will produce both fertilizer and industrial grades. Raw materials for urea production are anhydrous ammonia and by-product carbon dioxide from the synthetic ammonia plant. The ammonium sulphate plant will produce sulphate for fertilizer application.

Approximately 500 men will be employed during construction, and 200 will be required for operation and maintenance when the plants are in full production.

Marketing of anhydrous and aqua ammonia, urea, ammonium sulphate and urea-ammonia nitrogen solutions, for agricultural purposes other than export will be handled by

Pacific Supply Cooperative, with head offices at Walla Walla, Washington and branches throughout Washington, Idaho and Oregon. Industrial grade urea will be distributed by MacKenzie and Feimann, with offices in Vancouver, B.C., and Seattle, Washington. Anhydrous ammonia for industrial use in the Northwest will also be available as well as urea and urea-ammonia liquors for export markets.

Process design has been underway in the Fluor engineering offices for the past two months. Field work will commence this fall, and construction is expected to be completed and the plant in production during the latter part of 1955.

### CANADA

New British Dominion Oil and an unnamed US chemical firm are to share in the development of a multimillion dollar ammonia project to be located in Alberta, according to T. L. Brook, Dominion president.

## Annual S. C. Fertilizer Meeting

The South Carolina Annual Fertilizer Meeting for fertilizer dealers, salesmen, and manufacturers will be held at Clemson College, Clemson, South Carolina on Wednesday and Thursday, November 3, 4, 1954. A complete program will be furnished later. Hotel reservations should be made directly with the Clemson House, Clemson, South Carolina.

## Link-Belt Offers Martenet Process

Link-Belt Company, manufacturer of conveying and processing equipment, E. Rauh and Sons Fertilizer Company, Indianapolis, and Simon J. Martenet have developed the Martenet Process for the manufacture of homogeneous, granular, free flowing fertilizer. This process is now available to the fertilizer industry and is offered exclusively by Link-Belt Company.

The process permits formulation of all ratios of fertilizers using anhydrous ammonia, ammonium nitrate and other high grade materials. As a result of close control in the process the product is granular, homogeneous, and free flowing. Particle size can be closely controlled, and a wide range of product sizes can be obtained. The product can be stored in bags or bulk for long periods of time without caking.

Storage curing is not required in the process. Thus, inventory of material in process is reduced, effecting savings in expense of storage facilities.

Link-Belt Company designs and installs complete new fertilizer plants using the Martenet Process, or can convert existing plants. This process supplements Link-Belt experience with other processes for the fertilizer industry including dry mix, superphosphate, nitrophosphate, ammonium nitrate, urea and ammonium sulphate.

July, 1954

## PICTURES OF CALIFORNIA CONFERENCE

When we went to press with the June issue, carrying the story of the recent Second Annual Fertilizer Conference at Visalia, Calif., these pictures had not yet arrived. So here is our pictorial coverage of the conference, sponsored jointly by California Fertilizer Association's Soil Improvement Committee and University of California's AES.

1. Dr. George D. Scarseth, director of research, American Farm Research Assn., Lafayette, Ind. 2. CFA President B. H. Jones, Fresno, and Conference Chairman J. H. ("Hank") Nelson, Stockton. 3. Breakfast meeting of the sub-committee on Film Strips and Colored Slides of the CFA Soil Improvement Committee. 4. Phosphate Discussion panel: Ralph Waltz, Dr. Tom Embleton, Dr. O. Lilleland, Dr. O. A. Lorenz, Dr. Duane Mikkelsen, and Dr. D. G. Aldrich, Jr. 5. B. H. Jones, CFA president; Dr. W. H. Garman, APFC agronomist, Washington, D. C.; M. E. McCollam, chairman, CFA Soil Improvement Committee; Dr. W. E. Martin, University of California, Berkeley; J. H. ("Hank") Nelson, conference chairman; Robert Engle, NFA agronomist, Washington, D. C.



# Personals...

**Chas. M. (Kim) Barley**, recently released from active duty as first Lt. in the U. S. Army, has become associated with the sales department of **Diamond R. Fertilizer Co.**, Winter Garden, Fla. He graduated from the University of Florida in 1952, where he majored in soils and fertility. The many friends of his father, **George M. Barley**, long identified with the fertilizer industry in Florida, will be pleased to learn that his son is now associated with him.

\*\*\*

**Keith O. Carter** of Stillwater, Oklahoma has joined the chemical sales force of the **Colorado Fuel & Iron Corporation**, and will continue to live at Stillwater, reporting to the CF&I district chemical sales office at Wichita, Kansas. Mr. Carter will feature nitrogen materials to the fertilizer dealers of Oklahoma, Western Arkansas and Eastern Texas, with emphasis on Vitrea, the new 45% nitrogen product from the **Deere & Company** urea plant at Pryor, Oklahoma, which Colorado Fuel & Iron will distribute over the entire Southwest. Carter is a naval veteran of World War II, a graduate in agronomy at Oklahoma A & M, and has handled an Oklahoma territory for **Armour Fertilizer Works** the past five years."

\*\*\*

**Wm. A. Sheets** has been appointed

a special sales representative of the **Hammond Bag & Paper Company** in the Chicago area according to an announcement by **M. E. Greiner**, vice-president and sales manager of the Company.

**John E. Cornell, Jr.**, will continue as heretofore as Hammond's representative in the Chicago market area. The acquisition of Mr. Sheets will complement and broaden the scope of the company's services in this important market. Both Mr. Cornell and Mr. Sheets will make their headquarters at the company's office, 38 South Dearborn Street, Telephone Central 6-0777.

Mr. Sheets is well known to the trade having for many years previously represented the **Raymond Bag Co.**

Hammond has also acquired the services of **Harold S. McCormick, Jr.**, formerly with **H. J. Baker & Brother**.

Mr. McCormick will be attached to the general sales department at Wellsburg as special representative and will devote his efforts primarily to the fertilizer and chemical industries. He is also well known in the formula feed industry through the contacts in the sale of ingredients.

He is presently engaged in making a survey to determine ways and means of further improving the

Frank L. Barry who has been appointed representative for the Philadelphia territory of Arkell & Smiths. Mr. Barry's new territory includes Eastern Pennsylvania, Delaware, New Jersey and Maryland.



Two American Potash Institute men honored: Dr. John W. Turrentine, President Emeritus and Consultant, pictured, who was given an honorary degree of Doctor of Agriculture by University of North Carolina. Dr. Niven D. Morgan, the Institute's Southwest representative, was made Master Agronomist by Oklahoma A & M.

services Hammond is furnishing its customers in these industries.

\*\*\*

**R. W. Lahey, Jr.**, has been appointed sales manager of **Bemis Bro. Bag Company's** Norfolk plant and sales division.

Mr. Lahey joined Bemis at East Pepperell, Massachusetts, in 1946, and spent a year there in a comprehensive training program. He then became a factory representative for the Bemis Brooklyn plant, and transferred to Norfolk in 1949 where he did sales service work on bag packing equipment in the south Atlantic states. He later served as assistant superintendent at Norfolk and did various types of sales work, serving as a multiwall paper bag specialist just prior to his appointment as sales manager.

Bemis' **A. D. Hoepfner** was a speaker on the importance of packaging in today's changing economy at the N.A.M. Distribution and Sales

Tom L. Jones, made manager of fertilizer bag sales for Arkell & Smiths. He will continue as Central Division manager with Columbus, O. as headquarters.

Hugh O. Geeslin, Jr., pictured, who has joined Baughman Manufacturing Company as sales engineer. Floyd E. Walker, not shown, has been appointed Florida sales engineer.





Clinic for policy level executives, held in Kansas City recently. A panel of business executives reviewed sales promotion, advertising, product packaging, sales management, market research, and credit as they influence business today.

Briefly summarizing his thesis, Mr. Hoepfner says:

"The science of Cybernetics, or what is more commonly referred to as 'automation' of industry, is creating a second industrial revolution. The resulting increased mass production of goods necessitates a revolution in marketing techniques and methods to move these growing volumes of goods.

"The steps of self-selection to self-service to automation in retailing continue to minimize personal selling, particularly at retail level, and place an increasing sales burden onto product packaging.

"Business is healthy, but the contest for a share of the consumer dollar is getting sharper. Packaging that was satisfactory five years ago may not fit today's tempo. The alert producer is giving product packaging an important place on his marketing team."

\* \* \*

**L. M. Buhler**, vice president and manager of fertilizer production and phosphate mining for the **J. R. Simplot Co.**, announced his resignation June 8.

The resignation followed closely the resignation of **R. I. Troxell**, executive vice president and general manager, who left the firm June 1 to return to the practice of law.

Mr. Buhler started with Simplot

**Plant Food Corporation**, Los Angeles, Calif., has appointed **John J. Bingham** manager of its northern division, with headquarters at Bakersfield, Calif. Bingham was formerly with Pacific Guano Co., Berkeley, Calif.



in July 1951, as chief engineer and was promoted to vice president in January, 1953. He said he would announce future plans soon.

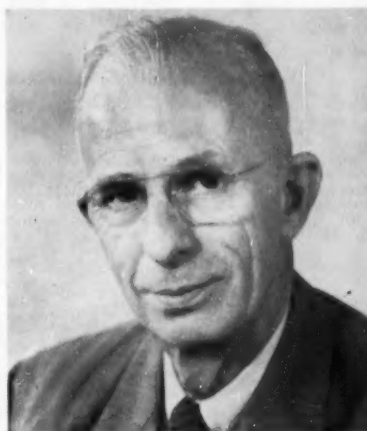
**W. Grant Kilbourne**, vice president of Simplot has been made

over-all manager of the company's fertilizer division and will move in the near future to his new headquarters in Pocatello. As general manager of the fertilizer division, he will supervise production, sales

Chester F. Hockley and Marlin G. Geiger who have been elected to the Board of W. R. Grace & Co. Mr. Hockley is Davison Division Advisory Board Chairman; Mr. Geiger is vice-Chairman.



When C. E. McCoy, left, was promoted from sales supervisor to research work by the Nitrogen Division, Billy E. Adams was made Southern Sales Supervisor of fertilizer manufacture materials. Mr. McCoy is helping build a technical service field group, working out of Hopewell.



1. William Engs, now assistant to the president of Stauffer Chemical. 2. Roger W. Gunder, promoted to Western sales manager. M. Dirck Reichard, manager of agricultural sales for the Northwestern territory.





Shown from left to right at a recent Sales Conference of the Allied Chemical & Dye Corporation are: H. S. Kramer, Allied Chemical & Dye Corporation; E. A. Streich, AC&D; P. V. Whiting, AC&D; E. M. Harper, AC&D; C. W. Jackson, Special Products Division Manager, Butler Mfg. Co.; W. S. Colvin, Northern Sales Manager of the Allied Chemical & Dye Corporation; A. B. Reagan, AC&D; J. P. Pierce, AC&D; A. W. Kinnard, AC&D; Carl Hull, BMC; G. L. McGuffey, AC&D; Lou Tempel, Butler Mfg. Co.; W. B. Van Wylen, AC&D; and D. T. Friday, AC&D.

This Conference was for the purpose of discussing the handling and application of liquid nitrogen fertilizer. Butler Manufacturing Company displayed bulk and skid tanks for the storage and transportation of liquid nitrogen fertilizer solutions.

and mining—including barite mining and sales. He has been with the company since 1946. The announcement of his promotion was made by **J. R. Simplot**, company president, following a meeting in Pocatello of **Simplot Soilbuilder** unit managers and sales personnel.

**Carl F. Sprague**, packaging engi-

neer for **Chase Bag Company**, has been re-elected a director of the Society of Industrial Packaging and Materials Handling Engineers, Northeastern Ohio Division. A past president of the society, he was elected to a two-year term.

Mr. Sprague is connected with the Sales Department of Chase Bag Company and is engaged in spe-

The general picture is of the new million dollar plant of Fulton Bag, being shown to members of the Indian Jute Mills Association delegation when they visited New Orleans. Jason M. Elsas, executive vice-president, far left, is shown explaining the plans. Top insert: James A. Mundie, appointed as sales supervisor of the New Orleans plant. Lower insert: Lewis H. Merrill, appointed assistant manager of the Fulton Bag New York office.



cialized research into packaging problems at the Company's technical laboratory in Chagrin Falls, Ohio.

**Dr. Arne E. Carlson** has been appointed manager of agricultural chemicals sales of the **DuPont Co.'s Grasselli** chemicals department, succeeding George A. Wright, who has been named Grasselli's New York district sales manager.

**Edward J. Maguire**, New York district sales manager since 1932, will act as a consultant until his retirement on June 30, after 44 years with Grasselli in New York.

**James W. Kettle**, former assistant director of the **U. S. Steel Corp.'s** cost and statistics division, has been appointed controller of the **Stauffer Chemical Co.**, its subsidiaries and associated companies.

**Hans Stauffer**, president, announces that Mr. Kettle, whose office will be with Stauffer New York headquarters, will report to the president and to the board of directors. His appointment as Stauffer Controller is effective immediately.

**Paul A. West** has been promoted to vice president of **Norkem-Northwest Chemical**. **C. E. Paulson**, president and general manager, announced at the firm's annual meeting.

**James E. Totman**, president of **Summers Fertilizer Co.**, announces the appointment of **Dr. C. LeRoy Carpenter** to the position of vice president and technical director of Summers and its affiliate, **Northern Chemical Industries, Inc.** The latter company is in the process of developing an anhydrous ammonia plant and supplemental facilities at Searsport, Me.

Appointment of **Donald G. Marshall** to the position of electronic development engineer on the engineering staff of the **Exact Weight Scale Company**, Columbus, Ohio, is announced by president **K. B. Neff**.

COMMERCIAL FERTILIZER

Much of Marshall's work will be concerned with development of new types of special electronic scales. A graduate of the University of Wisconsin, he was formerly with the Erie Resistor, of Erie, Pa.

**St. Regis Paper Company** announces that **Logan G. Hill** and **A. A. Roetzer** have been appointed assistant general sales managers of the multiwall packaging Division effective immediately. Mr. Hill will assist **Charles A. Woodcock**, vice president of **St. Regis Sales Corporation**, and general sales manager, in sales management activities, particularly in liaison work with national accounts. Mr. Roetzer will be responsible for the coordination of the Division's sales and engineering activities in all phases pertaining to packaging equipment and engineering.

**Herman S. Rhodes**, has been appointed engineering coordinator to provide liaison between the Providence Machine Shop, general sales and the managers of engineering in each of the respective districts. In this capacity, Mr. Rhodes, as a member of the Providence Manufactur-

ing Organization, will continue his headquarters at Providence, reporting to **Robert P. Bushman**, vice president in charge of the engineering and machine division.

**John Brent** has been transferred from the company's New York office to the Southwestern District of the Multiwall Packaging Division at Birmingham, Alabama. He has been assigned the territory of Tennessee and Alabama.

**John V. Collis**, president and director of **Federal Chemical**, Louisville, Kentucky has accepted an appointment to the 4-H Builders Council of the National 4-H Club Foundation.

Collis, who lives on a farm near Louisville, holds several prominent positions in the business world. They include, Director of the Puritan Cordage Mills; Director Louisville Public Warehouse; Vice President and Director, Louisville Realty Assn.; President and Director, Weissinger-Gaulbert Real Estate Co.; Director and member, Investment Committee, Citizens Fidelity Bank & Trust Co.; and Director and

member, Executive and Finance Committees, Commonwealth Life Insurance Co. He has served as a Director of the American Plant Food Council.

President **Joseph A. Howell** and vice presidents **C. Cecil Arledge**, **Edwin Cox** and **Charles E. Heinrichs** of **Virginia-Carolina** were among the newly added names to be listed in the 1954-55 edition of *Who's Who*, national publication of biographical sketches of famous living Americans.

**Hugo Riemer**, president of **Nitrogen Division**, was one of four participants in the University of Chicago Round Table radio program on May 23.

The half-hour program, carried nation-wide by N.B.C., was on "The Chemistry of Food Production."

During the discussion, Mr. Riemer told how fertilizers and other agricultural chemicals are making it possible to feed an ever-increasing population. He also mentioned the use of urea feed supplement as a source of protein for ruminants.

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# MARKETS

**ORGANICS:** Interest in Fertilizer Organics is primarily for the new season and quite a number of fertilizer manufacturers have booked supplies with domestic producers in the past few weeks. Domestic Nitrogenous is offered at prices ranging from \$3.00 to \$3.90 per unit of Ammonia, bulk, f.o.b. domestic production points. Imported Nitrogenous is indicated in limited quantity at around \$4.00/\$4.10 per unit of Ammonia, bagged, CIF Atlantic ports. At this writing the price of Chicago Sludge Tankage has not been announced for the new season.

**CASTOR POMACE:** The market is rather tight on supplies with the Texas and Oklahoma producers unable to offer until new supplies become available in late October or November. One of the northeastern domestic producers is out of the market for several months and it appears that only a limited tonnage for July and early August is currently available at the price of \$27.00 per ton, in bags, f.o.b. producers works.

**DRIED BLOOD:** The New York market is nominal at around \$9.00 per unit of Ammonia for unground sacked blood. The Chicago market is around \$7.50 per unit of Ammonia. Demand is primarily from the feed trade.

**POTASH:** Although lower prices for contract shipments of Muriate will prevail during the new season, there has been no unusual rush on the part of fertilizer manufacturers to make purchases. Port manufacturers will be particularly benefited by the new port price of 60.3¢ per unit bulk. One importer indicates a price of 90¢ per unit K20 ex-vessel basis Atlantic and Gulf ports on Sulphate of Potash and a price on Muriate of Potash a few cents less than domestic material.

**GROUND COTTON BUR ASH:** Interest in this material continues

steady and supplies adequate for current demand. Analyses have been running 33% to 38% K2O. Delivered costs of this form of Potash, primarily in the form of Carbonate of Potash, approximate the delivered cost of Domestic Sulphate of Potash.

**PHOSPHATE ROCK:** Shipments to domestic consumers are somewhat off but also heavier than usual for this time of the year on account of prospects of higher costs later resulting from increases in labor costs.

**SUPERPHOSPHATE:** Market conditions are very quiet on normal 20% grade as demand at this time of year is very slack. Contracts are being offered for Triple Superphosphate for the new season at the same basis, 98¢ per unit of Available Phosphoric Acid, f.o.b. Tampa, Florida, which price prevailed during the past season.

**AMMONIUM NITRATE:** Demand for this form of Nitrogen has slackened in line with the season and several producers are offering contracts for the new season at essentially the same prices as prevailed during the season now ending, namely, \$70.00 per ton, in bags, f.o.b. Etter, Texas, and Military, Kansas and \$68.00 f.o.b. Eldorado, Arkansas and Luling, La.

**NITRATE OF SODA:** Supply continues adequate and demand seasonal. Prices remain firm and unchanged.

**CALCIUM AMMONIUM NITRATE:** Limited supplies at several ports are available at \$51.25 per ton bagged f.o.b. cars at the ports. Bulk material is priced at \$48.25.

**GENERAL:** This season is practically over for most parts of the country and fertilizer manufacturers are now renewing contracts for raw materials for the new season. Prices of raw materials for new season's contracts have a generally steady tone. Some materials are slightly reduced such as Potash, whereas others are somewhat advanced such as Nitrogen Solutions.

## APFC

(Continued from page 35)

and more efficient and balanced farming.

Farmers must have more freedom of action in order to achieve better balance in farming operations. The program which the President has recommended is aimed in that direction.

We are moving from a wartime to a peacetime economy. This requires adjustments. These adjustments must be made gradually and courageously. The basic provisions of the program which the President has recommended should serve as a rallying point for all people interested in the future welfare of agriculture and the nation.

Price, however, is only one element in the marketing picture. We are meeting the challenge of marketing on a very broad front; through disposal programs—through cooperation with industry in merchandising campaigns—through efforts to increase export sales—and most basic of all in the long run, through expanded programs of marketing research and education.

Here are some of the things we are doing to move our surpluses, using every technique and law available. Transactions under the Mutual Security Act of 1953, Section 550, are expected to total \$230 million worth of surplus agricultural commodities in the current fiscal year. Barter operations under the CCC Charter Act total about \$36 million for the current fiscal year. Negotiations have been completed for the sale of \$20 million worth of wheat to the Spanish Government in exchange for foreign currency. Export payment programs under Section 32 of the Agricultural Act of 1935 have been put into effect for fresh pears, fresh and processed grapefruit, apricots, and raisins. In less than a year we have donated 180 million pounds of dairy products to 17 U. S. private welfare organizations for overseas relief in 36 foreign countries under Section 416 of the Agricultural Act of 1949. Under Public Laws 77 and 216 we shipped more than 600,000 tons of wheat to



Pakistan to avert famine there and 84,000 tons of wheat to alleviate serious food shortages in Bolivia, Jordan, and Libya. Food packages containing food valued at more than \$25 million were shipped East Berlin and East Germany and as a part of the Christmas food program for the needy in 20 friendly countries in Europe, Latin America, and the Near East. Three weeks ago we announced a new export program to reduce export prices of CCC feed grains.

Five weeks ago we began to sell nonfat dry milk at reduced prices for use in mixed poultry and animal feeds. Sales as of May 28 totaled over 400 million pounds.

Looking farther ahead, we sent trade missions to Europe, Latin America, and Asia this spring to seek new markets for farm products. These missions were made up of 35 leading authorities on agricultural production and marketing, including men from the national farm organizations and the heads of exporting associations. They have returned and their reports are encouraging.

We believe much can be accomplished through more vigorous merchandising campaigns. Our experience with beef last year proved that. Aggressive marketing and cooperation among agriculture, industry, and government raised consumption of beef to the all-time high of 76 pounds per person.

There is one area of activity, however, which I consider most basic of all: utilization and marketing research and education.

If we are going to expand our markets for farm products, at home and abroad, on a continuing basis, we must have more research pinpointed to specific problems. We must learn where the markets are, discover the best selling points, and concentrate on them.

Agriculture today must fight for consumer attention and consumer dollars. I'm a little tired of watching other segments in the economy out-promote agriculture. It's time we started out-promoting some of our competitors.

Many American women, for ex-

ample, spend more for beauty aids than they do for milk. Now, please understand, I'm all for beauty. I just happen to believe that a pint of milk a day is itself a mighty fundamental beauty aid. I'd like to see the balance a little more favorable to the dairy industry.

What do consumers want in agricultural products? They want quantity, quality, good nutrition, and attractive price. But they also want variety, convenience, eye-appeal, and taste-appeal. It's high time that agriculture used more of the legitimate want-creating techniques employed so successfully by other segments of the economy. Americans throughout the land know about the "pause that refreshes"—television viewers can tell you the beverage that made Milwaukee famous—and TV fight fans know the answer to the query, "What'll you have?" But they don't think about a delightfully refreshing cool glass of milk when they hear it.

The small white turkey is a success because it gives housewives what they want. Conversely, cotton has lost most of its tire cord market because it has been out-researched and out-promoted by rayon and nylon.

There are lessons for us in these things.

Our domestic markets for agricultural products are still only partly tapped. In a recent year the average urban family ate 2.4 pounds of meat per person, per week. But one family out of five that same year ate less than 1-½ pounds per person, per week. Three city families out of 10 consumed less than a pint of milk or its equivalent per person, per day. One-third of the families were using less citrus fruits and tomatoes than they needed. Thirty percent of the families were using fewer than five eggs per person, per week.

Good dietary standards recommend more of these foods than those families were consuming.

Let's tackle these markets, and do it more vigorously than ever before.

There are a good many research

projects already under way to find new and expanded uses and markets for agricultural products. Work on cotton has shown that the fiber can be made resistant to mildew, rot, and heat. It can be made flame-resistant and water-repellant. Let us join hands with industry groups to sell these qualities to the American people.

Utilization studies of wheat are showing us how to make more profitable uses of wheat straw in industry. Studies have also been made on preventing bread staling and to determine protein quality and content in wheat.

There are many new industrial uses for corn. It is used in the mines, the steel plants, the chemical factories, in explosives, textiles, and airplanes. It has helped give us dacron clothing.

Research on soybeans has also produced many new outlets, such as adhesives, resins, and paints. During the war, when imported oils were cut off, research found the way to improve soybean oil for human use.

We are working hard to find new outlets for peanuts. A new salad oil has been developed that remains liquid in a household refrigerator. A new fiber has been produced from peanut protein.

We are investigating the quality and better use of sugar by-products, and are studying ways of improving marketing methods and reducing marketing costs.

Research is under way to produce feeds from vegetable and fruit wastes. Marketing research is developing new packaging methods, better storage, transportation, freezing, and other processes.

Research is finding uses for milk by-products as raw materials for industry.

Frozen fruit concentrates have developed a whole new industry in the past few years. Now our chemists have found a way to make orange powder which, by the addition of water, becomes a tasty, nutritious juice. They're taking advantage of their experience with frozen fruit concentrates and powders in a con-

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certed research effort to develop stable and palatable forms of milk, both dried and concentrated. Good progress is being made. Dried concentrated whole milk—with a fresh milk taste—might do for the dairy industry what frozen concentrates have done for the orange grower.

These achievements show what can be done. They encourage us to push ahead faster—to redouble our efforts.

Of course, there is always the shortage of dollars to contend with. There are never enough funds to do the job that needs doing. But let us use the funds available so as to get more out of them. Let us all work together—industry, agriculture, and government—to seek the answer to wider markets that can mean so much to the welfare of all our people. Let us pool our efforts in the best possible manner, knowing that the research of today shapes the welfare of our country tomorrow—and indeed, the welfare of free peoples everywhere.

We can provide in ample abundance the food and fibers we need. We can do it through research and education, through conservation of our natural resources, and through the expansion of markets. We do not have to fear abundance if only we learn to use it wisely. Facts are the answers to fears.

Final speaker on the second morning's session was Dr. H. B. James, head of the department of Agricultural Economics at North Carolina State College in Raleigh, who addressed the gathering on "The Agri-

cultural Economic Outlook." The long-term outlook is favorable, he stated, and the immediate outlook is good by pre-war standards but not good by comparison to the past decade.

While above-average general economic conditions are a definite help to agriculture, he continued, price factors have an excessive effect on the farmer's situation. The laws of supply and demand can be better correlated in other segments of the economy than in agriculture because there is little elasticity of demand for farm products, Dr. James said. The solution to this dilemma lies in finding ways for price to better serve its function in the marketing of agricultural commodities. While technology has made tremendous strides, he surmised, the farmer's decision on what and how much to raise does not depend on technology alone, but to a great extent on the general economic conditions. More study must be devoted to helping the farmer predict the economic consequences of his decision.

The recent squeeze on the net farm income, and the further squeeze anticipated, Dr. James predicted, will tend to lower the living standards of the marginal agricultural producer. With this factor having already concentrated 74% of the production in the hands of 22% of the farmers, more of the marginal group will be forced to other methods of earning a livelihood. As this happens the farmers become a numerically smaller group and lose an even greater measure of political power.

On the final evening of the convention, the annual banquet was

held. President Paul T. Truitt introduced the Council's guests to the group and then turned the program over to the featured speaker, Dr. Paul D. Sanders, editor of "The Southern Planter," whose ready wit and bag full of stories have made him an ever-popular speaker on so many of the Council's programs. Punctuating his talk with amazing anecdotes, he reviewed the current agricultural situation with particular emphasis on those phases concerning the constructive use of plant foods.

Following the banquet, the members and guests enjoyed dancing in the ballroom as the meeting drew to a close.

### BANKERS

(Continued from page 19)

**FARM YOUTH PROGRAMS.** It is essential that our young people be encouraged to stay on the farm. We believe that every farm bank should conduct a systematic youth program or cooperate in existing programs.

**PRODUCTION LOANS.** Recognizing the fact that bankers can have great influence on the philosophies and methods of farm customers at the time they apply for loans, we propose that bankers make every possible effort, during loan interviews, to interest borrowers in better farming techniques—such as soil testing, improved breeding, better seed and scientific feed—and assure themselves that the loan granted will finance such operations.

**LONG TERM LOANS.** We believe it is the farm banker's responsibility to help his customers finance such capital improvements as irrigation (where practicable), terracing

and soil renovation. Where such loans must run longer than the bank's limit, the farm banker should use his contacts to help his customer finance the improvements through other sources.

#### Background Information on FARM CREDIT

(From a study prepared by the Market Research Section of Spencer Chemical Company)

The banks of the nation are the farmer's largest single source of credit. On January 1, 1954, the farm debt, held by all banks amounted to \$3,892,723,000. In addition, the sum of \$1,721,283,000 in Commodity Credit Corporation loans to farmers was held by banks in connection with the Government's farm price support program.

According to a tabulation by the Federal Deposit Insurance Corporation, 12,505 of the 13,422 insured commercial banks in the United States served agriculture by making credit available to farmers in 1952. This is approximately 93% of all insured banks which had agricultural loans outstanding on December 31, 1952.

These figures provide a measure of the tremendous extent to which banks are involved in American agriculture and give some indication of the position farm bankers hold as advisors to their clientele.

#### How The Bankers Were Chosen

In September of last year, nominations for the honor of "Distinguished Farm Banker" in the states of Missouri, Kansas, Nebraska, Iowa, Illinois, and Minnesota were received from various bank publications. Mr. John P. Miller, Vice-President—Finance of Spencer Chemical Company, then wrote to the Managing Bank Officers of these states, asking them to cast a ballot for the man they considered outstanding. Nearly all of the six elections were won with heavy majorities.

The chosen bankers were then recognized in award presentations in their respective communities, and releases were sent to the daily, weekly, farm and bank press.

**ILLINOIS:** John H. Crocker President, Citizens National Bank, De-



Spencer vice-president J. R. Riley, Jr.—third from left—as he greeted the arriving bankers: D. E. Crouley, Roy Sweet, J. R. Keener, John H. Crocker and E. J. Evans.

catur, Illinois. The influence of the Citizens National Bank of Decatur is widely felt on the farms of Illinois. John Crocker's active farm department headed by Walter W. McLaughlin, former state director of agriculture, manages 124 farms, totaling 35,000 acres, in 20 counties. The four-man staff is active in research plots and demonstrations and holds an annual dinner for the owners and tenants they serve.

**MISSOURI:** E. J. Evens, Cashier, Citizens Bank, Amsterdam, Missouri. One of the proudest accomplishments of the School of Agriculture of the University of Missouri is the "Balanced Farming Program," which has been whole-heartedly accepted by so many Missouri farmers. One of the most important forces behind this program has been E. J. Evens of Amsterdam. Although his community has a population of only 175, E. J. Evens' thinking on farm banking is as big as the state he has served so well.

**IOWA:** Roy A. Sweet, President, Story County State Bank, Story City, Iowa. Farm youth and agricultural education are the twin interests of Roy Sweet, founder of the Story County Bank and a past president of the Iowa Bankers Association. He has long fathered F.F.A. and 4-H work in his community through special production loans and prize awards. Employees of his bank are encouraged to take the agricultural credit "short courses," offered annually by Iowa State College.

**MINNESOTA:** Donovan E. Crouley, Vice-President, Correspondent Division, Northwestern National Bank of Minneapolis, Minneapolis, Minnesota. Don Crouley is an effective worker for improved agriculture in the great Northwest because he probably enjoys a first-name acquaintanceship with more bankers in the area than any other man. For many years he has been deeply con-

cerned with the problems of livestock credit; currently, he is serving his second term as Chairman of the Livestock Committee of the American Bankers Association.

**KANSAS:** R. N. Downie, President, Fidelity State Bank, Garden City, Kansas. Farmers in western Kansas have been relatively prosperous for a good many years now, but it's easy for "Bob" Downie to remember the Dust Bowl Era of 1933-1939. During that period, it took all the eloquence he could muster to keep farmers from giving up and moving out. His perseverance has paid dividends. In the two decades from 1933 to 1953, deposits rose from \$162,000 to \$10,000,000. Meanwhile, the Fidelity State has employed a full-time farm expert and championed irrigation, fertilizer, scientific cultivation practices and better livestock management.

**NEBRASKA:** James R. Kenner, President, Thayer County Bank, Hebron, Nebraska. Back in 1949 the executive committee of the Nebraska Bankers Association made a great contribution to sound agriculture. The committee not only enlisted the support of bankers, but also went out into the industrial community for support to establish the Nebraska Conservation Foundation. One of the founders and, since the first year, president, of the Foundation is James R. Kenner. Today, because of the Foundation's work, soil testing, farm meetings and irrigation have real backing. And Jim Kenner is a farmer, himself, with some 900 acres, of which 200 are under irrigation.

## OBITUARY

**Duke H. McKinney**, Manager, Red Star Fertilizer Company, Sulphur Springs, Texas, June 18, of a heart attack.



# SOUTHERN CONTROL OFFICIALS MEETING



New officers of the Association of Southern Feed and Fertilizer Control Officials, elected at the annual meeting in Oklahoma City June 21-22: Seated (L to R)—M. P. Etheredge, Mississippi, Vice-President; E. A. Epps Louisiana, President; Bruce Poundstone, Kentucky, Secretary-Treasurer. Standing (L to R)—N. L. Franklin, Virginia, H. H. Hoffman, Florida; R. W. Ludwick, New Mexico, and Parks A. Yeats, Oklahoma, Retiring President, Directors

Research workers, manufacturers and Southern feed and fertilizer control officials took a close look at each other's problems during the Southern Control Officials' annual meeting in Oklahoma City, Okla.; June 21 and 22.

Research workers and educators in the field of feed and fertilizer use and development were among the speakers appearing on the program along with representatives of the two industries and leadership in the Officials' Association. The two-day session saw 49 officials representing 18 states, and 65 representatives of industries registered.

At the close of the convention which will meet in New Orleans, Louisiana next year, E. A. Epps,

Louisiana, was elected President, M. P. Etheredge, Mississippi, Vice-President, and Bruce Poundstone, Kentucky, Secretary-Treasurer. Directors named to serve on the Board with the Retiring President, Parks A. Yeats, Oklahoma, were N. L. Franklin, Virginia, H. H. Hoffman, Florida, R. W. Ludwick, New Mexico.

In the opening session June 21, the convention heard a welcome delivered by B. D. Eddie, Oklahoma City feed manufacturer, substituting for the President of the State Board of Agriculture, Harold Hutton, and the President's Address by Mr. Yeats.

The afternoon's session of the first day saw attention focused on sub-

jects applying to fertilizer.

Dr. Randall Jones, Associate Dean and Director of Agriculture, Oklahoma A&M College, spoke on "Approved Ratios and Minimum Analysis Grades." Robert O. Woodard, Oklahoma A&M College Extension Agronomist, gave a review of "Fertilizer Usage in the Southwest," followed by a panel discussion on "How Can A Fertilizer Control Official Assist in Improving the Agricultural Program." Appearing on that panel were Maurice B. Rowe, Supervisor of Fertilizer Inspection in Virginia, C. C. Crawford, Bartlesville, Oklahoma, fertilizer manufacturer, Byrle Kilian, District Supervisor of Vocational Agriculture in Oklahoma, and Harry James, Oklahoma County Farm Agent.

R. W. Ludwick, State College, New Mexico, introduced a display of inspectors' equipment and supplies used in several surrounding states.

The banquet, the evening of June 21, was followed by the final day's program devoted to feeds.

## P. C. B. Issues Boron Poster

Pacific Coast Borax Company has issued a new Boron educational poster, which graphically illustrates the signs of boron starvation in a number of common crops. The poster is intended for display in dealer establishments, and to be helpful to both dealer and farmer. James A. Naftel, manager of their plant food division, writes us that copies will be supplied on request. Write him at 100 Park Avenue, New York 17.



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**POSITION WANTED:** Capable, experienced superintendent for dry mixing or acidulating plant, or will consider maintenance of larger plant. Have had 18 years of experience in the fertilizer industry. Box #77, c/o Commercial Fertilizer, 75 — 3rd St., N. W. Atlanta, Ga.

**POSITION WANTED:** Dry-Mixing Fertilizer Plant Superintendent desires to make a change. 33 years old, 12 years experience. Box #86, c/o Commercial Fertilizer, 75 Third St. N. W., Atlanta, Ga.

**STEEL TANKS FOR SALE:** Dished heads — all welded. Excellent for storing liquid fertilizer, chemicals, etc. At Grand Rapids, Mich. (8) 23,400 gal, (2) 14,00 gal, (12) 9,300 gal. At Tonawanda, N. Y. (2) 7,000 gal. At Reading, Pa. (9) 4600 gal. At Philadelphia, Pa. (3) 13,700 gal, (3) 9150 gal. PERRY EQUIPMENT CORP. 1426 N. 6th St. Philadelphia 22, Pa.

**FOR SALE:** Dry Mixing Fertilizer Plant. Good condition. Capacity ten thousand tons. Located in North Alabama; two railroads, Tennessee River, seven paved highways, paved farm to market roads. Well established trade. Box #5, c/o Commercial Fertilizer, 75 Third St., N. W., Atlanta, Georgia.

**FOR SALE:** New Leader Fertilizer & Lime Spreader, body 6 feet wide, 11 feet long, late model with auxiliary engine, bought new, February 4, 1952. For sale very reasonable. Farmers Cotton Oil Company, Wilson, N. C.

**VERMICULITE FINES**  
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Truck and Carload Quantities  
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**FOR SALE:** Complete dry mixing fertilizer plant at port in Eastern North Carolina. Now operating. Ideal location, wonderful farming trading area. Capacity 50,000 tons. Inquiries invited for prompt attention. Box 75, c/o Commercial Fertilizer, 75 Third St., N. W. Atlanta, Ga.

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## DEL-MAR-VA HOLDS 33rd ANNUAL CONVENTION

The thirty-third annual meeting of the Del-Mar-Va Peninsula Fertilizer Association was held at the George Washington Hotel in Ocean City, Md., on Saturday, June 26. The address of welcome was made by Edgar H. McGrath, president of the organization, who also introduced visiting agronomists and control officials from the Delaware, Maryland and Virginia area.

The National Fertilizer Association was represented by W. R. Alstetter and the American Plant Food Council by Louis H. Wilson. Both these officers of the national groups made brief talks to the convention.

Featured speaker at the meeting was Claude E. Phillips, head of the Department of Agronomy at the University of Delaware. His topic was "University of Delaware's Program for Increasing Farm Profits,"

and he outlined the important part fertilizers play in boosting the farmer's income from a limited investment.

Final phase of the morning program was a group discussion, after which the delegates were entertained at a luncheon.

During the afternoon a program of fun was arranged for all to enjoy. The men's entertainment committee was comprised of J. Otis McAllister, chairman, Dallas D. Culver and F. Nash Strudwick. The entertainment for ladies was planned by Mrs. John Morris, chairman, and committee members Mrs. T. Scott Purse, Mrs. William B. Tilghman and Mrs. Ralph A. Ross.

The program committee consisted of Elbert N. Carvel, chairman, Edgar McGrath and J. Otis McAllister. The registration committee was

composed of Ted Smith, chairman, assisted by James R. Ford. Ben T. Truitt and T. Scott Purse handled arrangements for hotel accommodations.

Association officers who headed the convention were: Edgar H. McGrath, president; J. Otis McAllister, vice president; Robert A. Fischer, secretary; and James Ford, treasurer.

Manufacturers belonging to the Association are: A. S. Wolley Co., Seaford; Dorchester Fertilizer Co., Cambridge; E. S. Valliant & Son, Inc., Centreville; Farmers and Planters Co., Salisbury; Huston, Culver & Co., Seaford; Milford Fertilizer Co., Milford; Peerless Fertilizer Co., Chestertown; Valliant Fertilizer Co., Laurel; Warner W. Price Co., Smyrna; William B. Tilghman Co., Salisbury-Pocomoke; and Worcester Fertilizer Co., Snow Hill.

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DOLOMITIC  
HYDRATED  
LIME (165 TNP)  
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DOLOMITE  
(107 TNP)  
Screened to size



## CONGRATULATIONS . . .

To all members of the industry who contributed to the success of the annual fertilizer conventions!

The active participation of leaders in Congress, government, and business is a tribute to the essentiality of the industry and its vital role in fostering continued progress in agriculture.

We were most happy to attend.

## POTASH COMPANY OF AMERICA

**Carlsbad, New Mexico**

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Here is the equipment that gives you everything you want for closing bags in fertilizer plants! Specially built to stand up under heavy production schedules handling chemicals and minerals, Union Special Bag Closing Machines also provide the high output rates... low packaging costs... and strong, efficient closures needed to meet modern competitive conditions. It pays to use UNION SPECIALS!

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